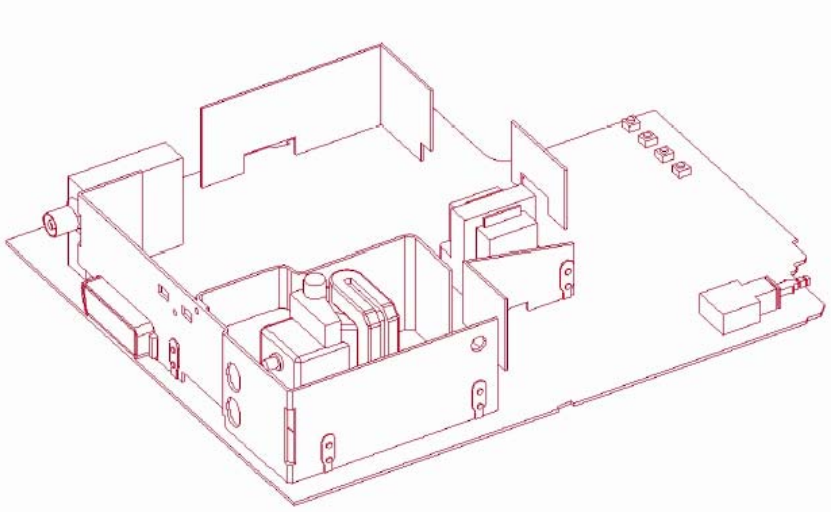
Colour Television

TE2.1E AA

Service
Service
Service



Service Manual

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PHILIPS

1. Technical Specifications, Connections and Chassis Overview

• **Reception**
100 programmes, PLL Tuning, Aerial Input : 75 Ohm

• **TV Systems Off Air**
PAL B/G + D/K + SECAM B/G + D/K, SECAM L/L'

• **Add Systems Ext In**
NTSC 3.58 + NTSC 4.43

• **Sound Systems**
B/G, D/K (FM A2+Nicam stereo), L/L'

• **Screen Format**
4:3

• **Picture**
16/9 Compress, 4:3, 4:3 Expand

• **Sound**
RMS Power Intern, 2 x 5W Stereo

• **Teletext**
10 page Top / Flof Text

• **Connectors**
Scart1: RGB + CVBS (rear Ext-1)
Scart2: CVBS + SVHS (rear Ext-2)
Headphone Front (3.5 mm)
Aerial Input (75 Ohm, rear)

• **Mains Voltage**
Official :220/240 VAC (± 10 %)
Real : 150/240 VAC (± 10 %)
Mains Frequency: 50 Hz (± 5 %)

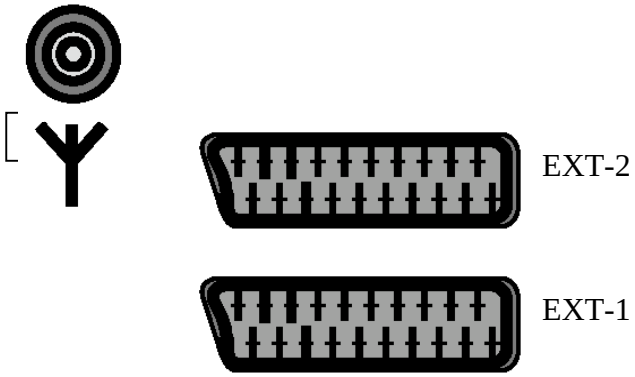
• **Languages OSD Menu**
Turkish, English, French, German, Nederlands, Spanish, Italian.

• **Power Consumption :** 95W

• **Stand-By Power Consumption :** <8W

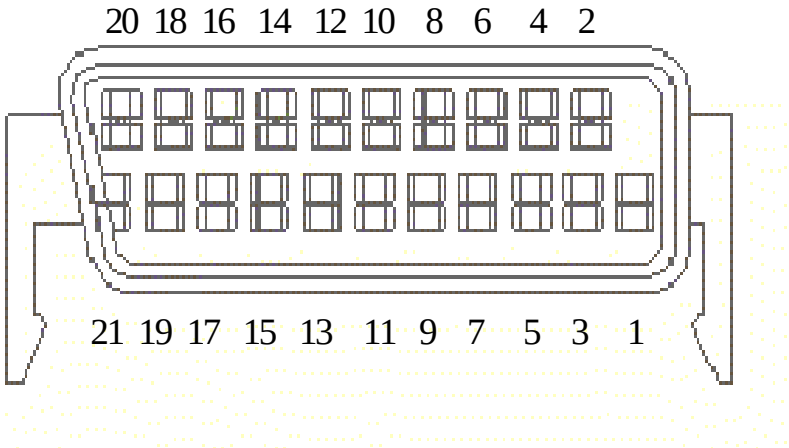
1.1 Connections

1.1.1 Rear Connections



EuroScart

1. Audio Output 1. right channel 0.5 VRMS/<1k0
2. Audio Input 1. right channel 0.5 VRMS/>10k0
3. Audio Output 2. left channel 0.5 VRMS/<1k0
4. GND (audio)
5. GND
6. Audio Input 2. left channel 0.5 VRMS/>10k0
7. RGB Input, blue (B)
8. Switch signal video (status)
9. GND
10. Reserved for clock signals (not connected)
11. RGB input, green (G)
12. Reserved for remote control
13. GND
14. GND switch signal RGB
15. RGB input, red (R) / Y
16. Switch Signal RGB
17. GND (video)
18. GND
19. Video Output 1Vpp/75 ohm
20. Video input 1Vpp/75 ohm / C
21. Shield



2. Safety Instructions, Warnings and Notes

2.1 General

1. Use only the original spare parts with the same specifications for replacement.
2. Only the original fuse value should be used.
3. Safety components, indicated by the symbol, ⚠ should be replaced by components identical to the original ones.
4. Main leads and connecting leads should be checked for external damage before connection. Insulation must be checked. Parts contributing to the safety of the product must not be damaged or obviously unsuitable. This is valid especially for insulators and insulating parts.
5. Thermally loaded solder pads are to be sucked off and re-soldered.
6. Ensure that the ventilation slots are not obstructed.
7. Potentials as high as 25 KV are present when this receiver is operating. Operation of the receiver outside the cabinet or with back cover removed involve a shock hazard from the receiver.
8. Servicing should not be attempted by anyone who is not thoroughly familiar with precautions necessary when working on high voltage equipment. Perfectly discharge the high potential of the picture tube before handling it. The picture tube is highly evacuated and if broken. Glass fragments will be violently expelled. Always discharge the picture tube anode to the receiver chassis to keep of the shock hazard before removing the anode cap.
9. Keep wire away from the high voltage or high temperature components.
10. When replacing a wattage resistor, keep the resistor 10mm away from the circuit board.

2.2 Handling the MOS chip components

MOS circuit requires special attention with regard to static charges. Static charges may occur with any highly insulated plastics and can be transferred to
persons wearing clothes and shoes made of synthetic materials. Protective circuits on the inputs and outputs of MOS circuits give protection to a limited extend only due to time of reaction. Please observe the following instructions to protect the components against ESD.

1. Keep MOS components in conductive package until they are used. Most components must never be stored in styropor materials or plastic magazines.
2. Personnel must not touch the MOS components to avoid electrostatic discharging.
3. Hold the component by the body touching the terminals.
4. Use only grounded instruments for testing and processing purposes.
5. Remove or connect MOS Ics when operating voltage is disconnected.
6. Personnel in charge must make sure that they are connected with the same potential as the mass of the set by a wristband with resistance.

2.3 X-Ray radiation precaution

Excessive high voltage can produce potentially hazardous X-RAY radiation. To avoid such hazard, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 25KV at zero beam current (minimum brightness) under 220 V AC power source. The high voltage must not under any circumstance, exceed 30KV. It is recommended the reading of the high voltage to be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter. The primary source of X-RAY radiation in the TV receiver is the picture tube. For continued X-RAY radiation protection, the replacement tube must be exactly the same type tube as specified in the part list.

3. Directions for use

DFU can be found on the internet: www.p4c.philips.com

4. Mechanical Intructions

Disassembly procedure is explained as below. Before disassembling the TV set please read the safety instructions and warning parts of the service manual.

• Turn off TV and plug the mains out
• Remove screws (10 pieces) to dismount the back cover
• Disconnect the following sockets to take the chassis out ;
  - Deflection cables
  - Degaussing coil
  - Speaker cable
  - Power cable

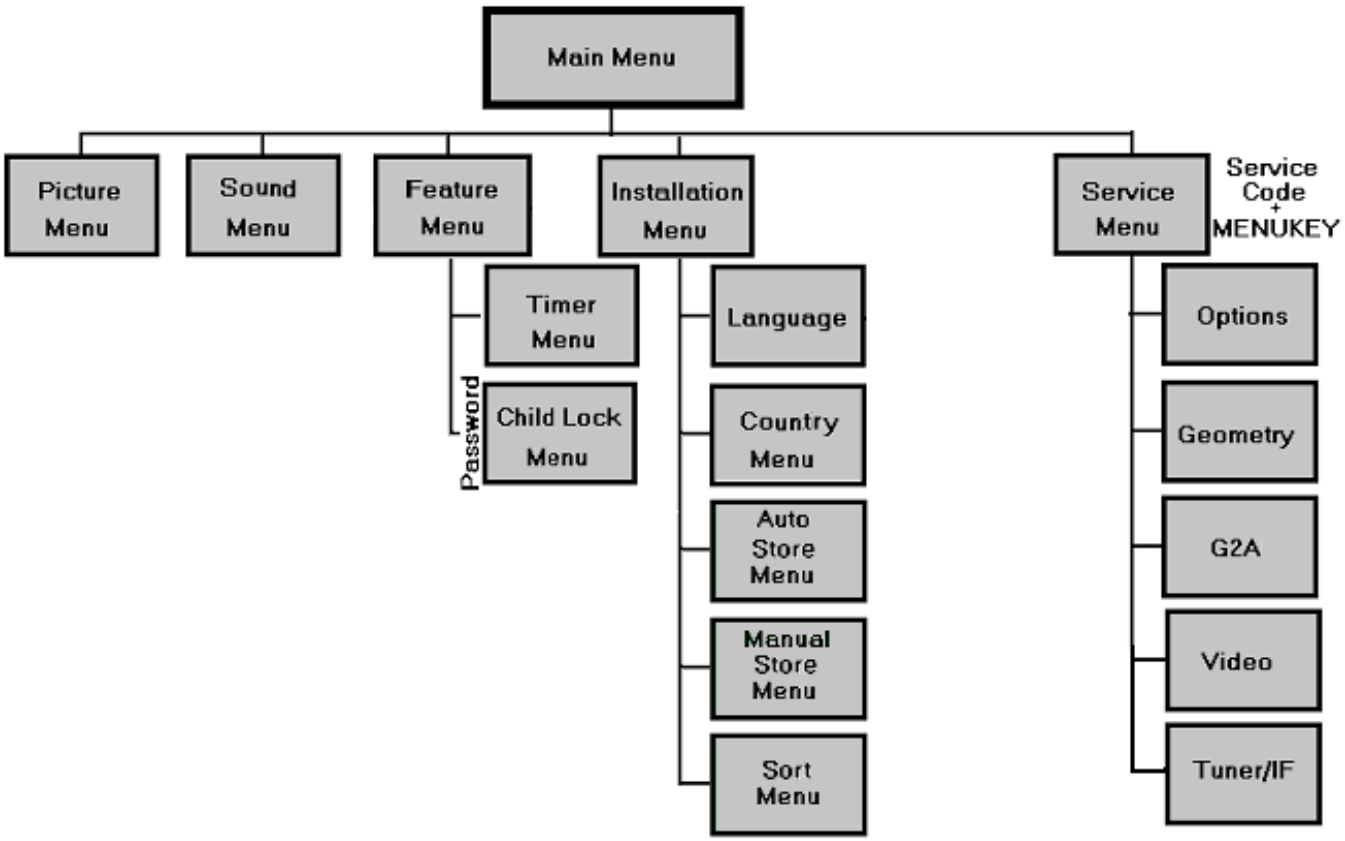
• Remove the ground cable localised between tube module and mass wire.
• Remove the CRT drive module from picture tube.
• Remove anode cable localised on the picture tube.
• Slide out the chassis through the guides (no screws, straps or other fixing).

Please follow the assembly instructions explained below;

• Before inserting the chassis into guides, check the control buttons in front of the chassis. In case of misplacement of control buttons place them into correct position.
• Slide the chassis into guides until the connection cables could be reached to their sockets.
• Plug in the power cable socket to KP03.
• Plug in the degauss cable socket to KP02.
• Plug in the speaker cable socket to KA04.
• Place the CRT drive module on picture tube.
• Slide the chassis completely on its place. Be careful about control buttons.
• Plug in the deflection cable socket to KD02 and KD01.
• Place the anode cable to picture tube. Be careful about high voltage!
  - CRT drive module must be grounded via mass cable.
• Place the back cover back to its place.(10 screws)
• Plug the mains in.
• Turn on the TV.

5. Service Modes, Error Codes and Fault finding

5.1 Menu Structure



General Menu Options

To minimise the number of keys on the remote control unit, less frequently used functions are accessible only via simple menus. The menus are controlled by the following keys;

- "**MENU**" button makes the Main Menu displayed. Previous menu is displayed at each press of MENU button, when any menu OSD is displaying.
- Navigation **Up / Down** keys are used for selection of the previous and next item on the current menu OSD. Selected item is highlighted.
- **Left** and **Right** are used for changing the right side value of the highlighted menu item if the item is not a submenu. Beside that **Right** button also is used as **OK** button.
- **Menu Right** key is used to select a highlighted item, generally for displaying submenu OSDs.
- **Navigation Up / Down** buttons are used for picture format 16:9 Compress, 4:3 or 4:3 Expand

5.2 Menu Control

Main Menu

- Picture
- Sound
- Features
- Installation

Picture Menu

Brightness	⇒ 64 Steps
Colour	⇒ 64 Steps
Contrast	⇒ 64 Steps
Sharpness	⇒ 64 Steps
Hue	⇒ 64 Steps (for NTSC only)
Colour Temp	: Normal, Warm, Cool
Store	Stored

Sound Menu

Treble	⇒ 64 Steps
Bass	⇒ 64 Steps
Balance	⇒ L-32 ..0.. 32-R
AVL	: On, Off
Store	Stored

Features Menu

Timer	
Childlock	: On, Off
Parental Cont.	
Ext-1	: VCR, Decoder/DVD
Ext-2	: VCR, Decoder/DVD

Timer Menu

Sleep	: Off, 15, 30, 45,…, 120
Time	⇒ XX : XX (am, pm)
Start Time	⇒ XX : XX
Program No	: 0 … 99, SVHS2, Ext-2, Ext-1
Activate	: Off, Once, Daily

Parental Control Menu

Lock	⇒ Off, XXX
Pr. Lock	⇒ Off, XXX

Installation Menu

Language	: English, French, German, Turkish, Dutch, Italian, Spanish
Country	: …, A, B, CH, D, DK, E, F, FI, GB, GR, I, N, NL, P, IRL, L, S, TR
Auto Store	
Manual Store	
Sort	
Name	

Auto Store Menu
Program No
TV
◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊

Manual Store Menu

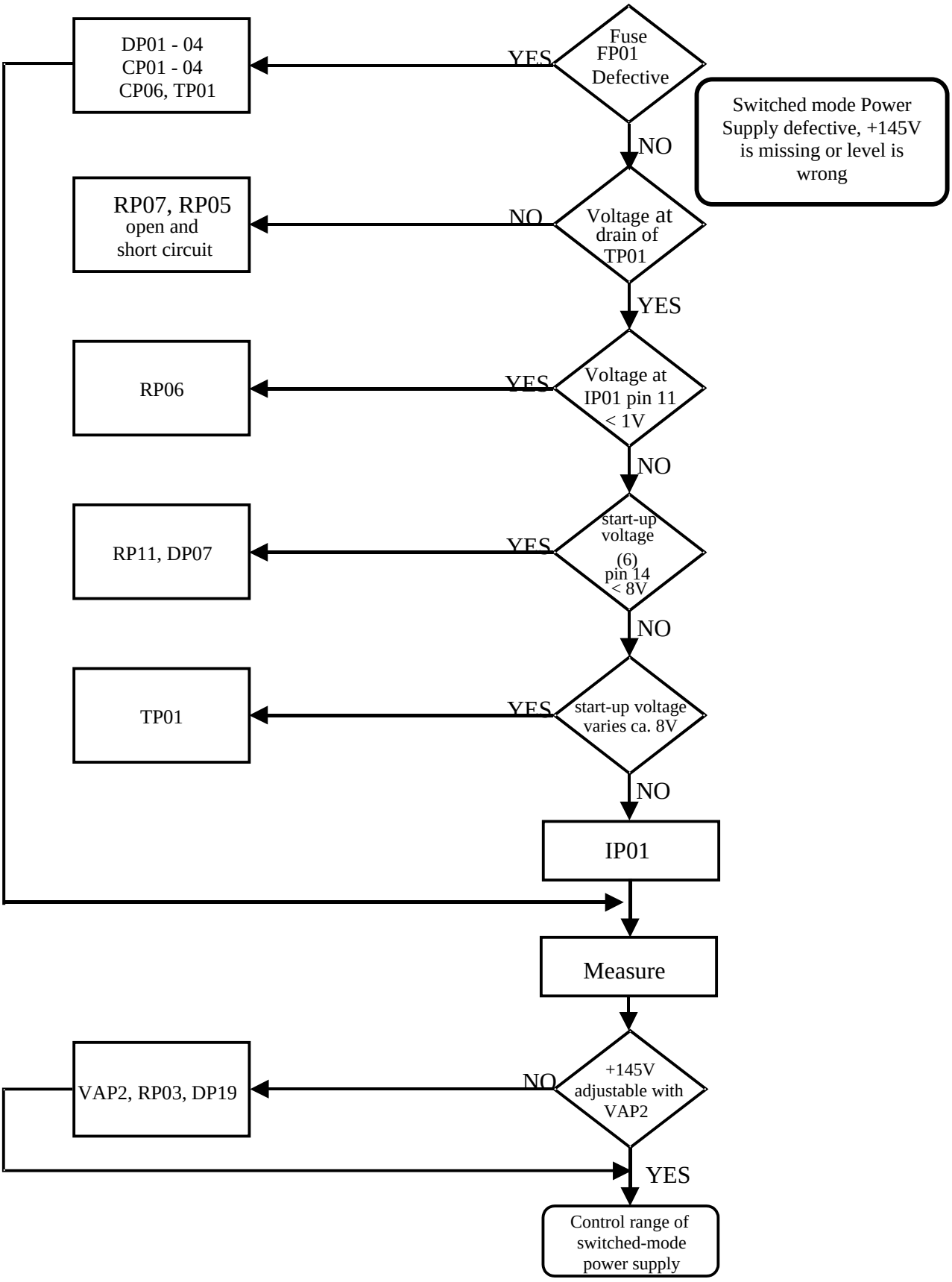
System	⇒ Europe, France, West Europe, East Europe
Search	⇒ XXX.25 MHz
Program No	⇒ XX
Fine Tune	⇒ -10 … +10 gauge
Store	Stored

5.3 Country List

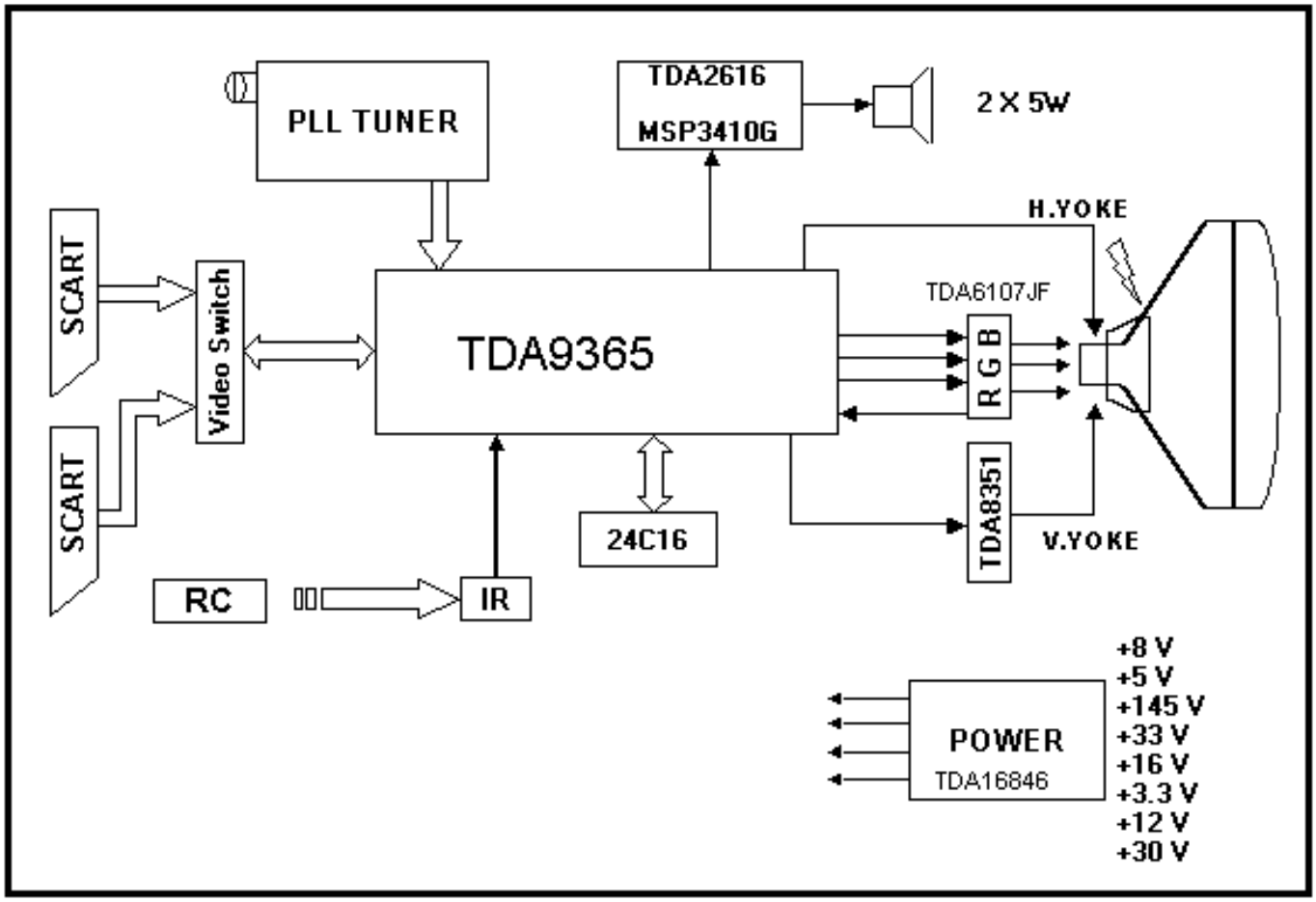
…, A (Austria), B (Belgium), CH (Switzerland), D (Germany), DK (Denmark), E (Spain), F (France), FI (Finland), GB (UK), GR (Greece), I (Italy), N (Norway), NL (Netherlands), P (Portugal), IRL (Ireland), L (Luxemburg), S (Sweden), TR (Turkey)

Philips 28” 4:3 FS	
Austria	**A**
Belgium	**B**
Switzerland	**CH**
Germany	**D**
Denmark	**DK**
Spain	**E**
France	**F**
Finland	**FI**
United Kingdom	**GB**
Greece	**GR**
Italy	**I**
Norway	**N**
Netherlands	**NL**
Portugal	**P**
Ireland	**IRL**
Luxemburg	**L**
Sweden	**S**
Turkey	**TR**
Other	**...**

5.4 Fault finding diagram of Power supply

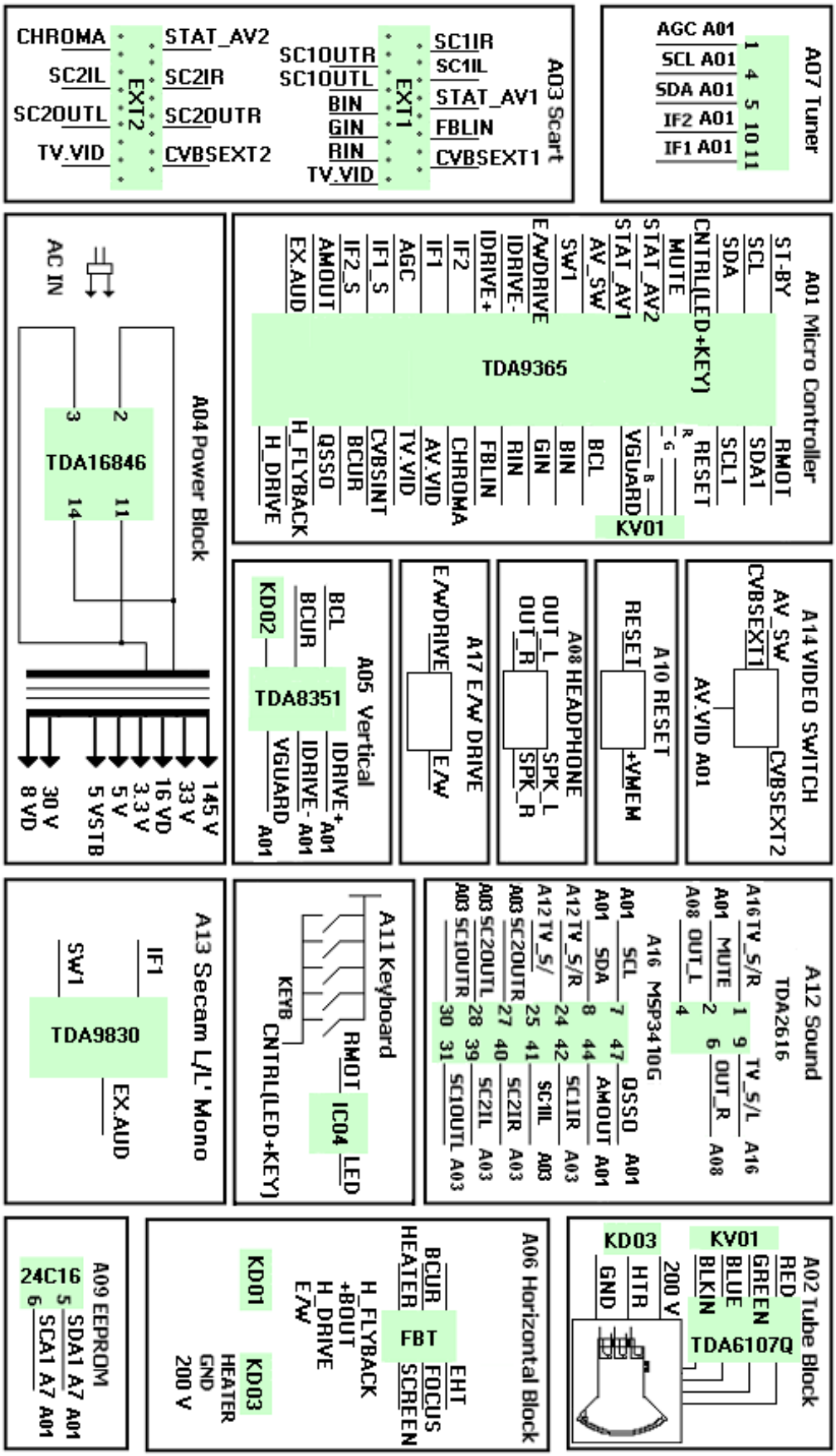


5.5 Chassis Diagram

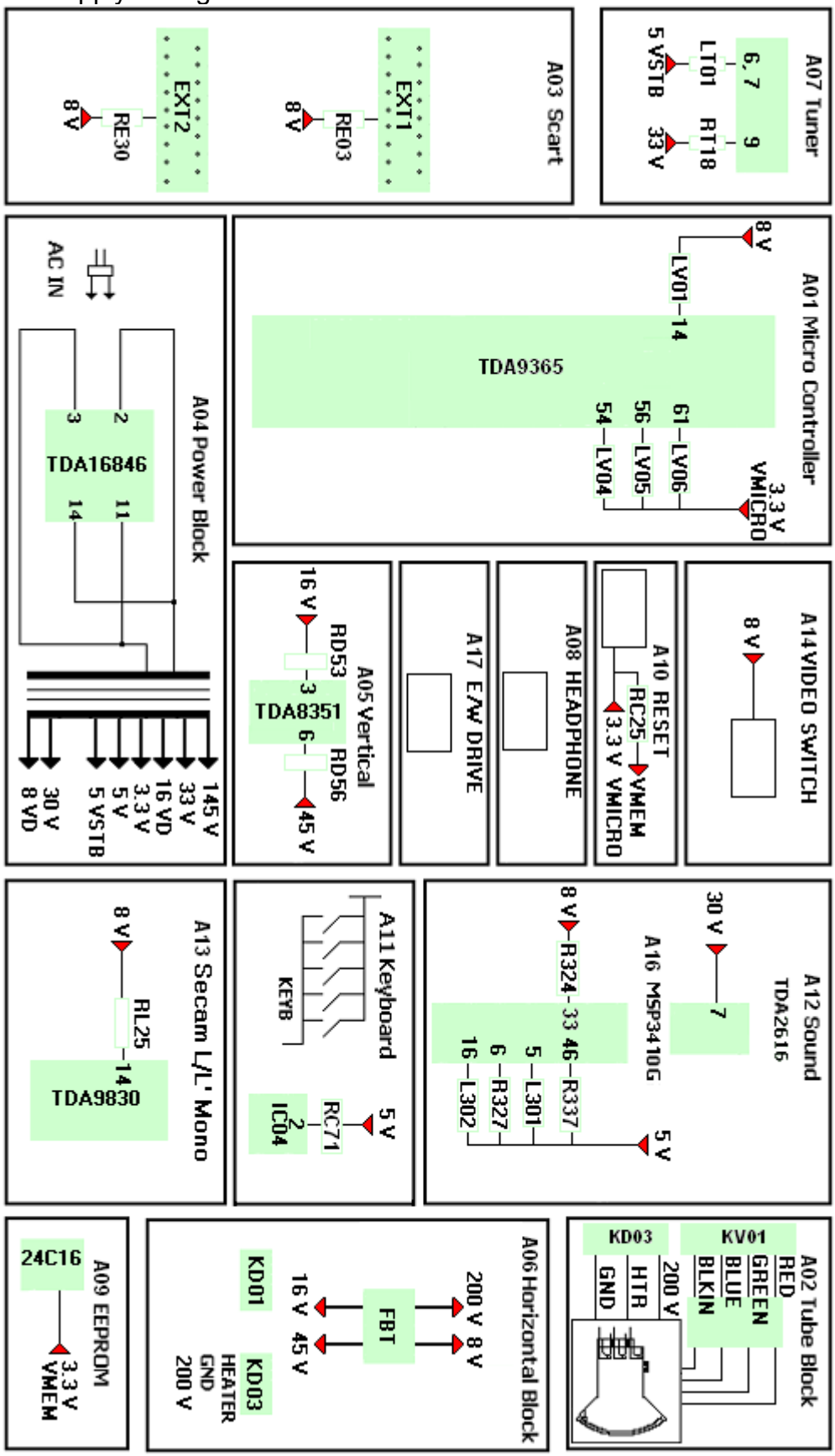


6. Block Diagrams

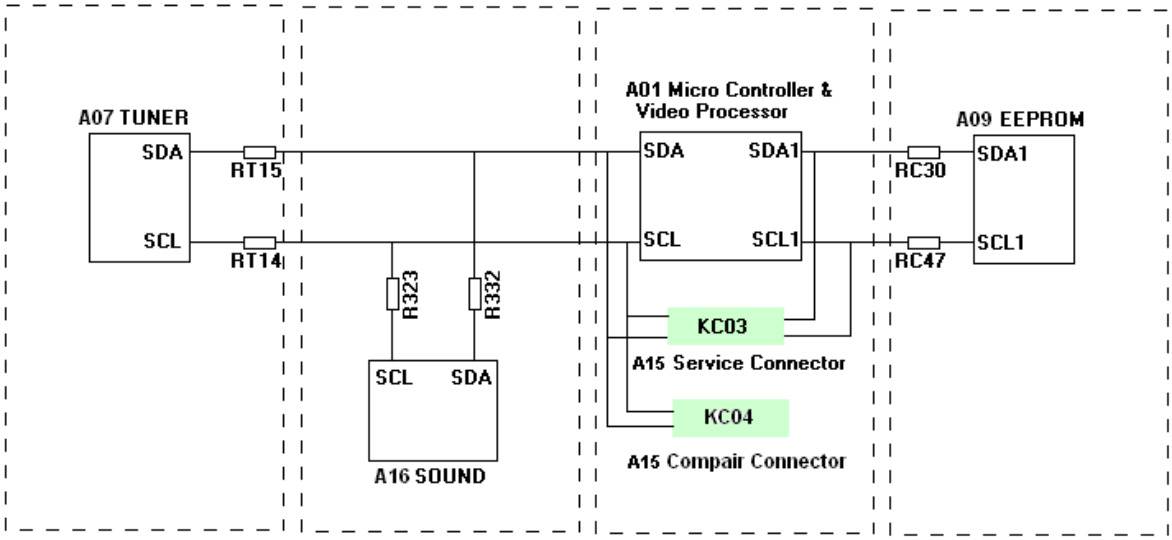
6.1 Block diagram



6.2 Supply Voltage Overview



6.3 I^2C BusOverview



7. Circuit Diagrams and PWB layouts

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Schematics:

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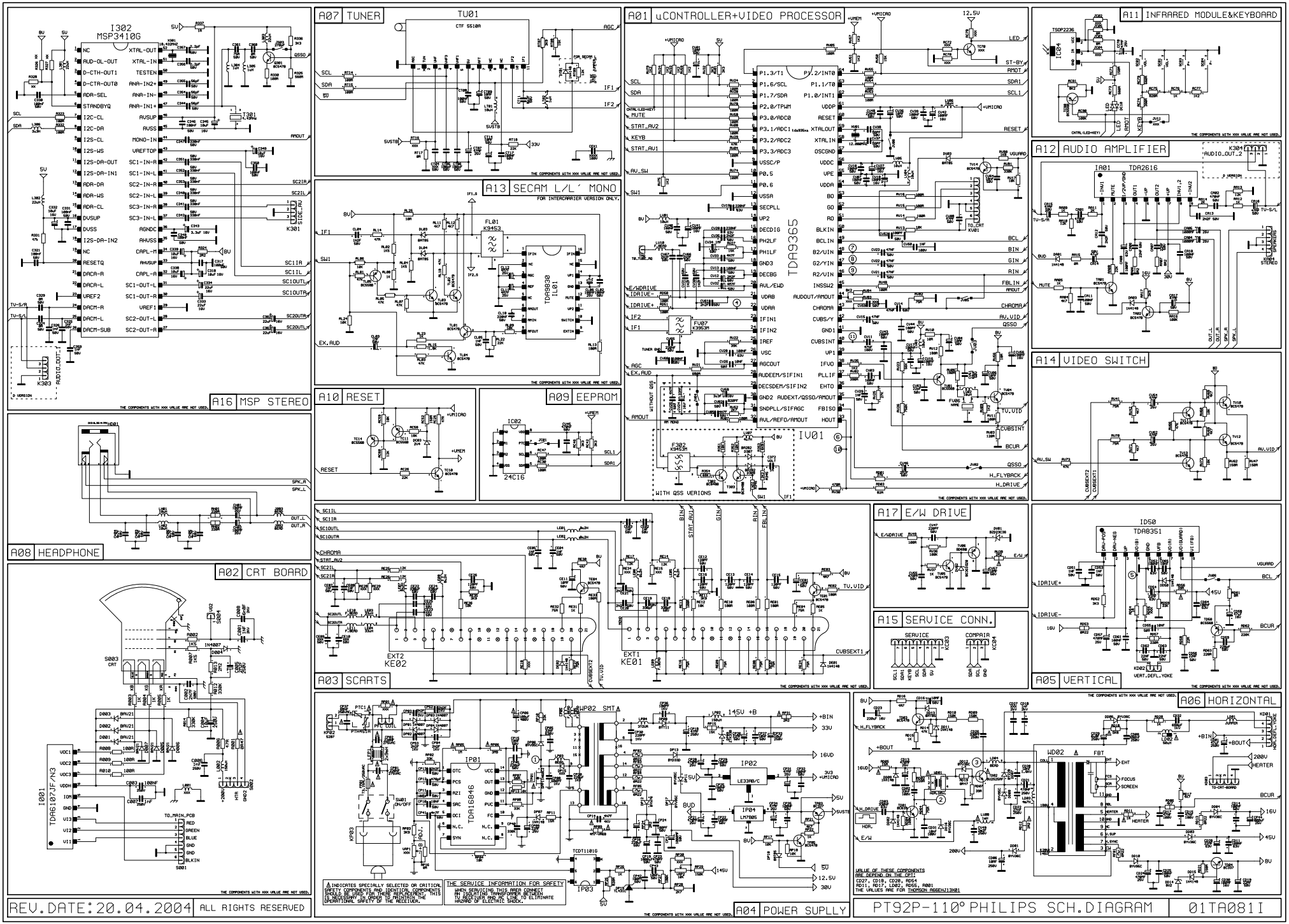
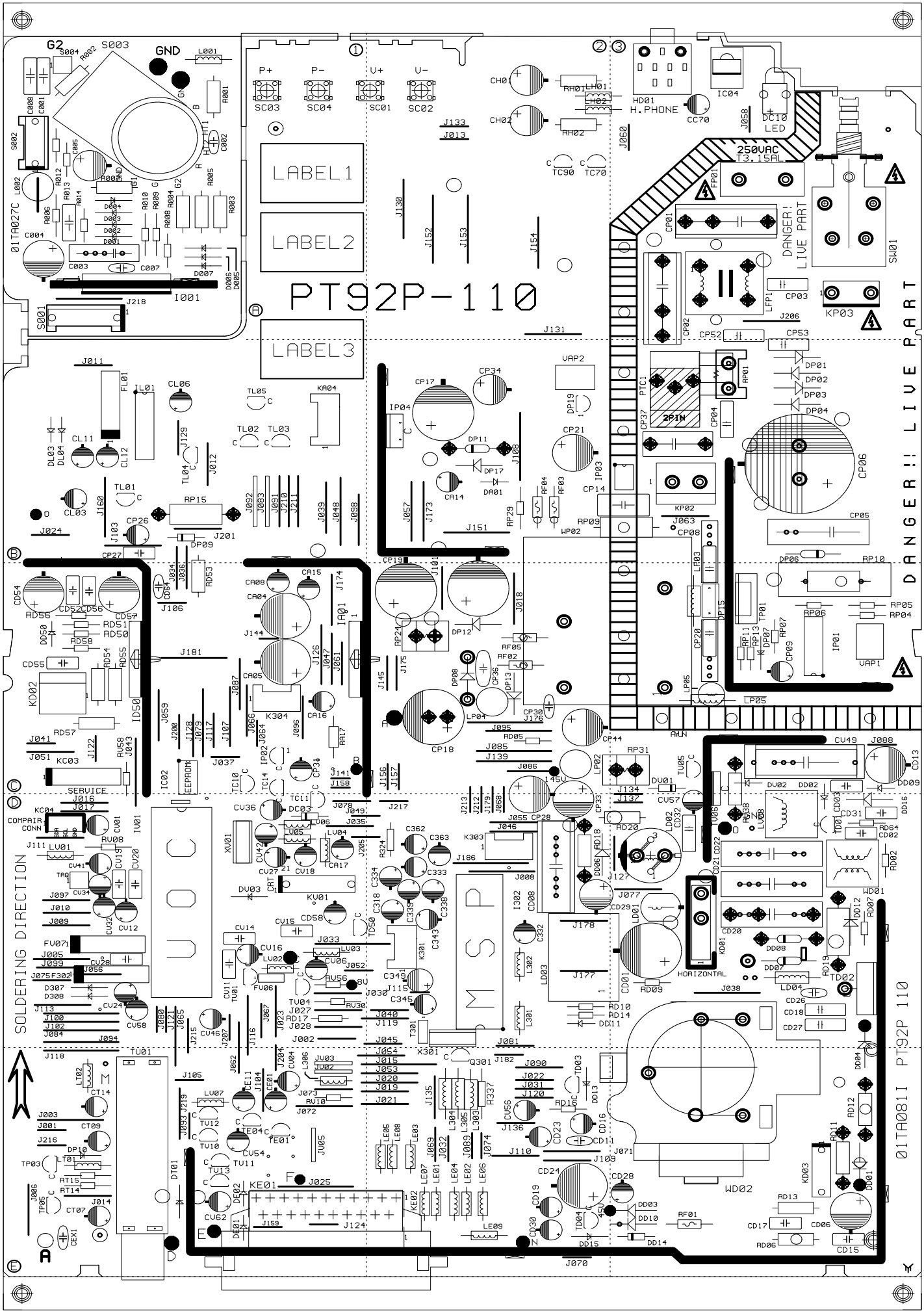
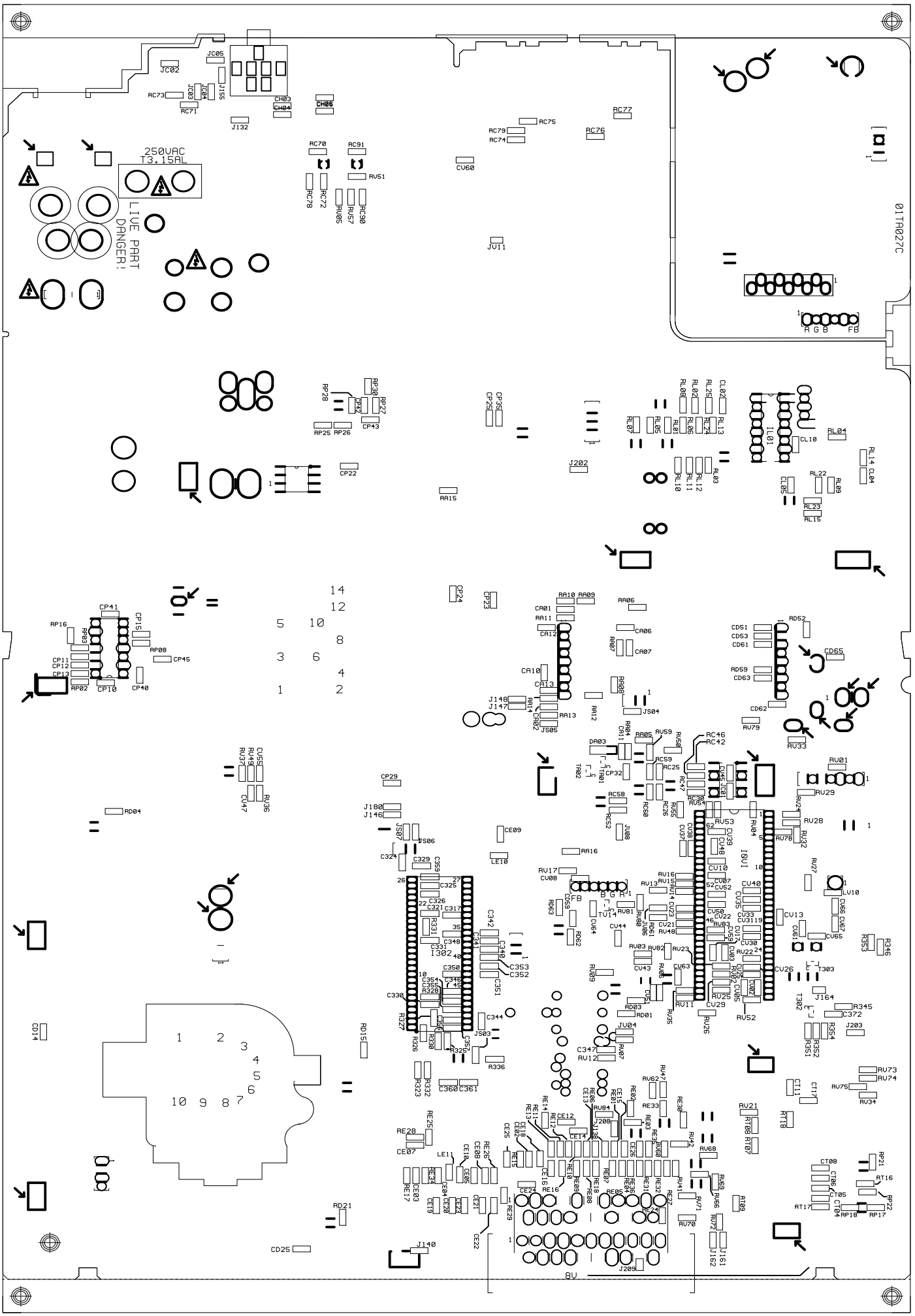
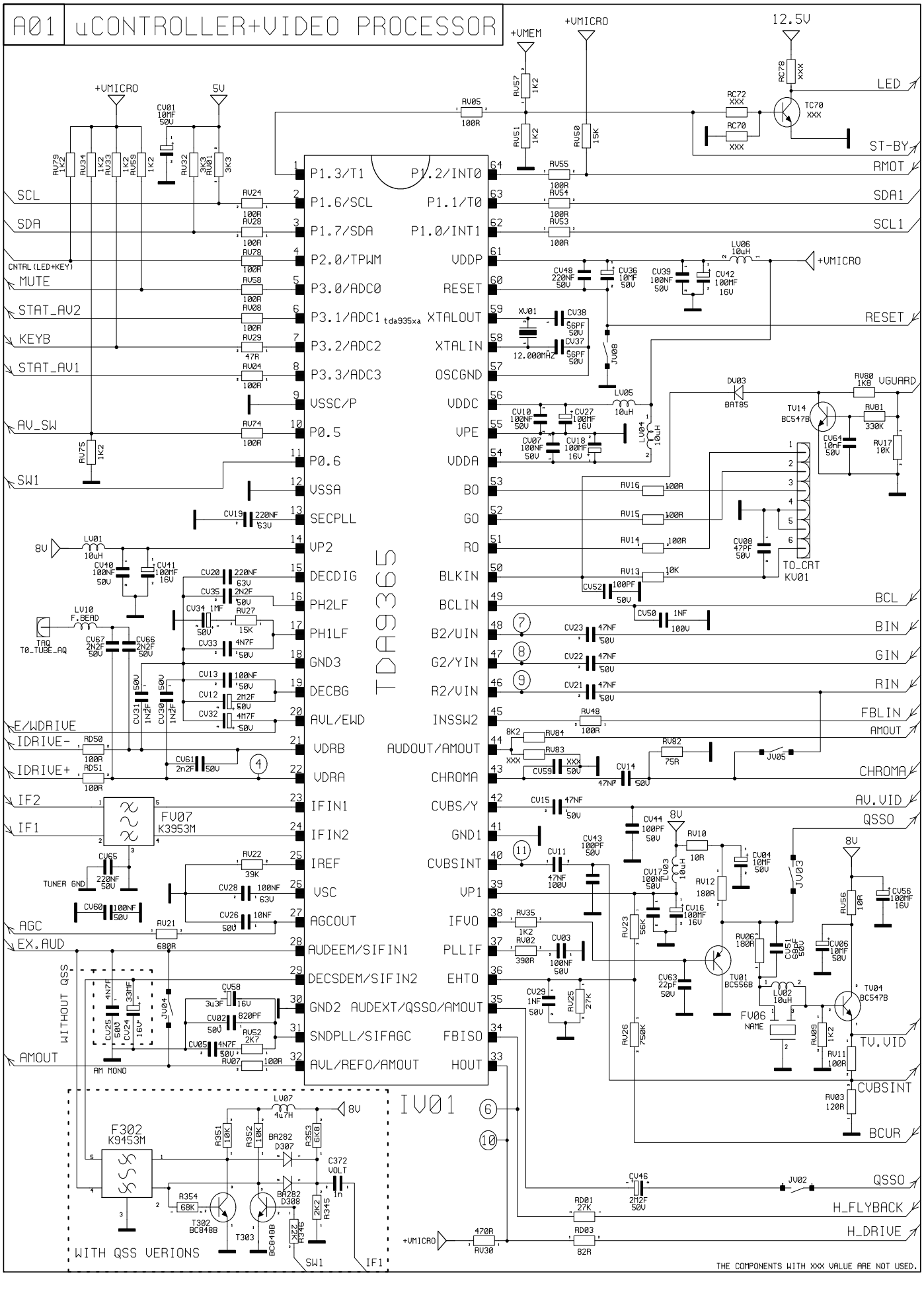
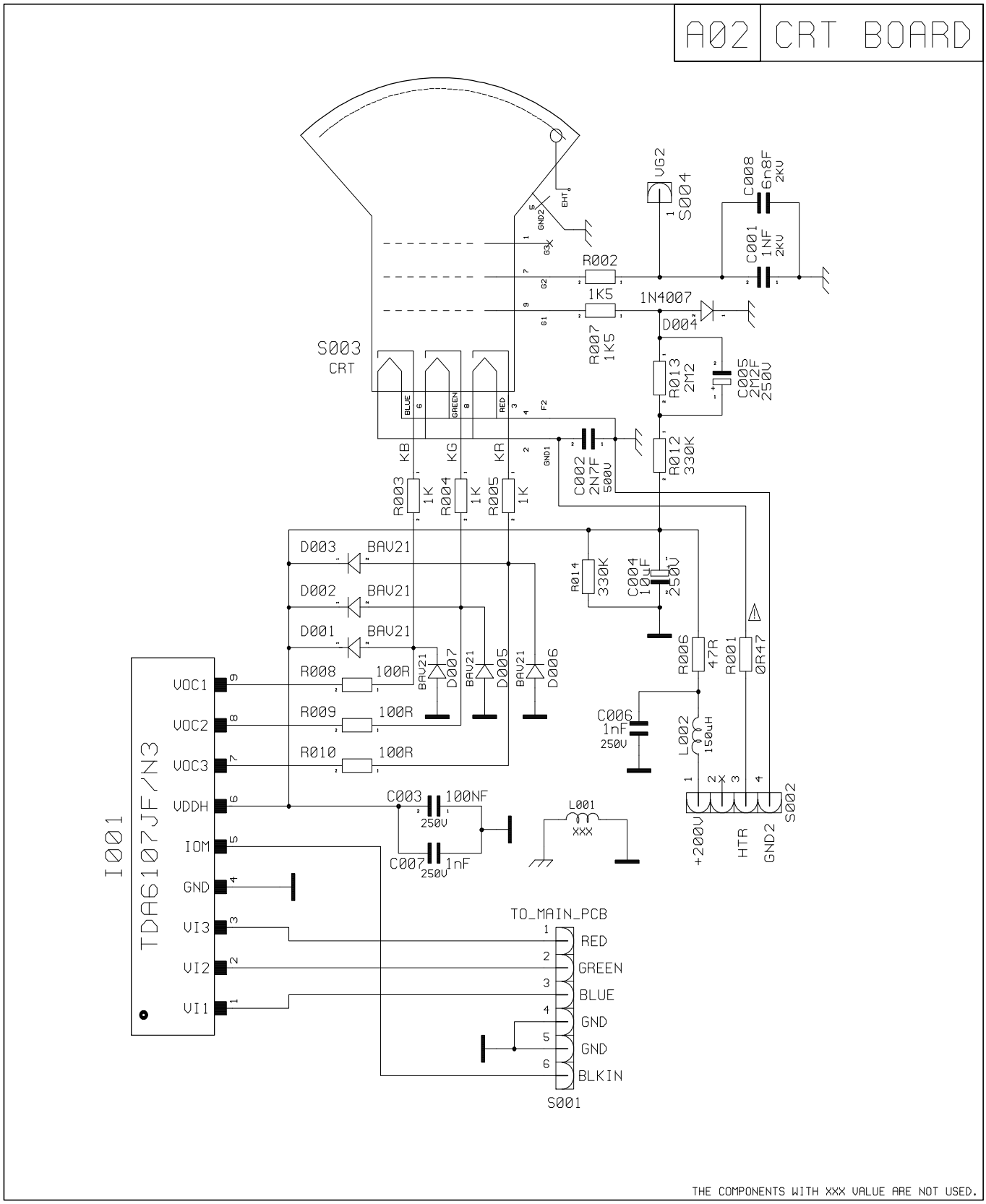
A08 24
A09 25
A10 25
A11 25
A12 26
A13 26
A14 27
A15 27
A16 28
A17 27

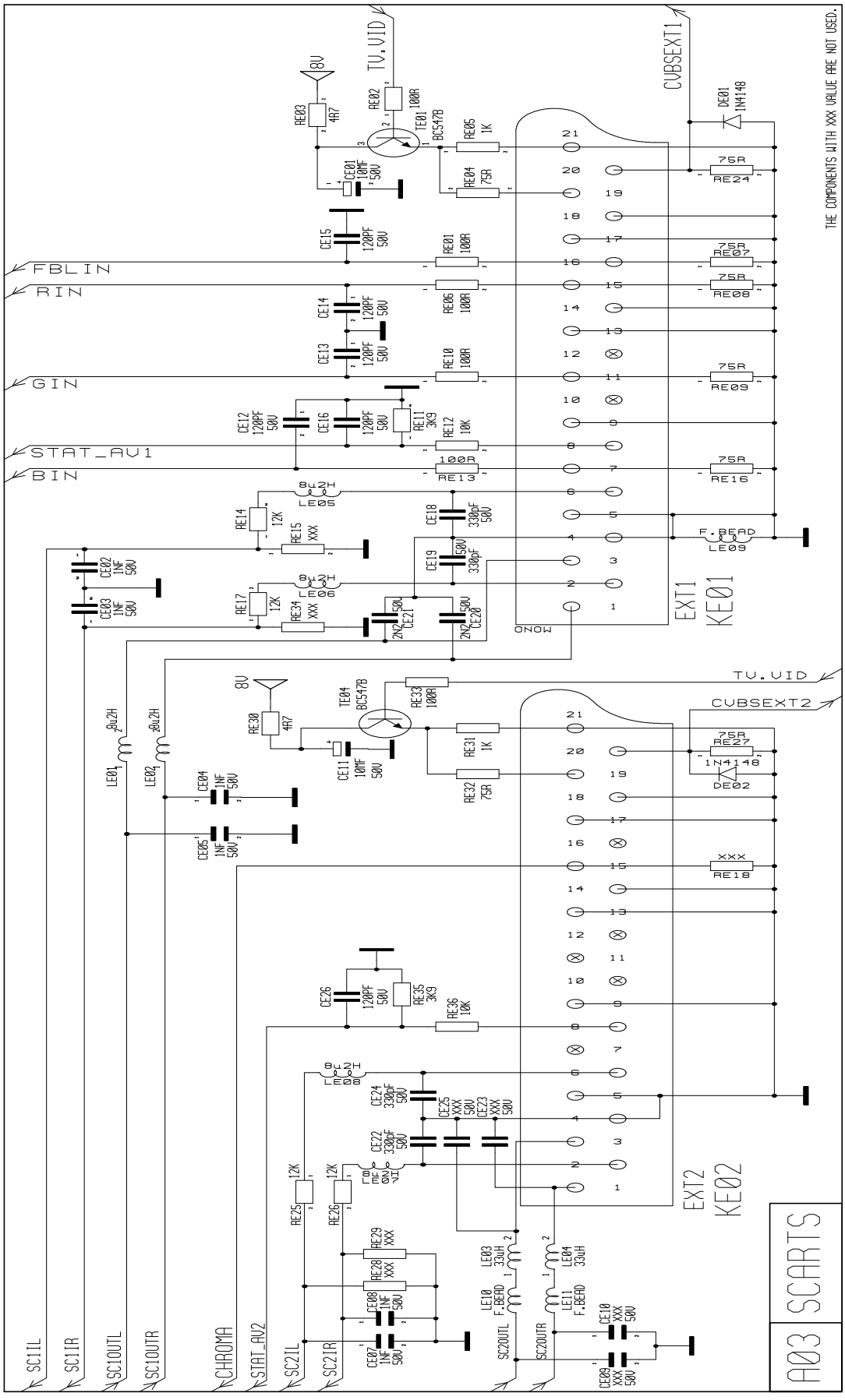

TE2.1E AA
EN 16
A16 MSP STEREO
I302 MSP3410G
A07 TUNER
TU01 CTF 5510A
A13 SECAM L/L´ MONO
FOR INTERCARRIER VERSION ONLY.
A10 RESET
A09 EEPROM
IC02 24C16
A01 uCONTROLLER+VIDEO PROCESSOR
TDA9365
IV01
WITH QSS VERIONS
A11 INFRARED MODULE&KEYBOARD
TSOP2236
A12 AUDIO AMPLIFIER
IA01 TDA2616
A14 VIDEO SWITCH
A08 HEADPHONE
A02 CRT BOARD
I001 TDA6107JF/N3
A17 E/W DRIVE
A15 SERVICE CONN.
SERVICE
COMPAIR
A03 SCARTS
EXT2 KE02
EXT1 KE01
ID50 TDA8351
A05 VERTICAL
A06 HORIZONTAL
WD02 FBT
A04 POWER SUPPLY
IP01 TDA16846
IP02 LE33RB/C
IP03 TCDT1101G
IP04 LM7805
145V +B
PT92P-110° PHILIPS SCH.DIAGRAM
01TA081I
REV.DATE: 20.04.2004
ALL RIGHTS RESERVED
THE COMPONENTS WITH XXX VALUE ARE NOT USED.

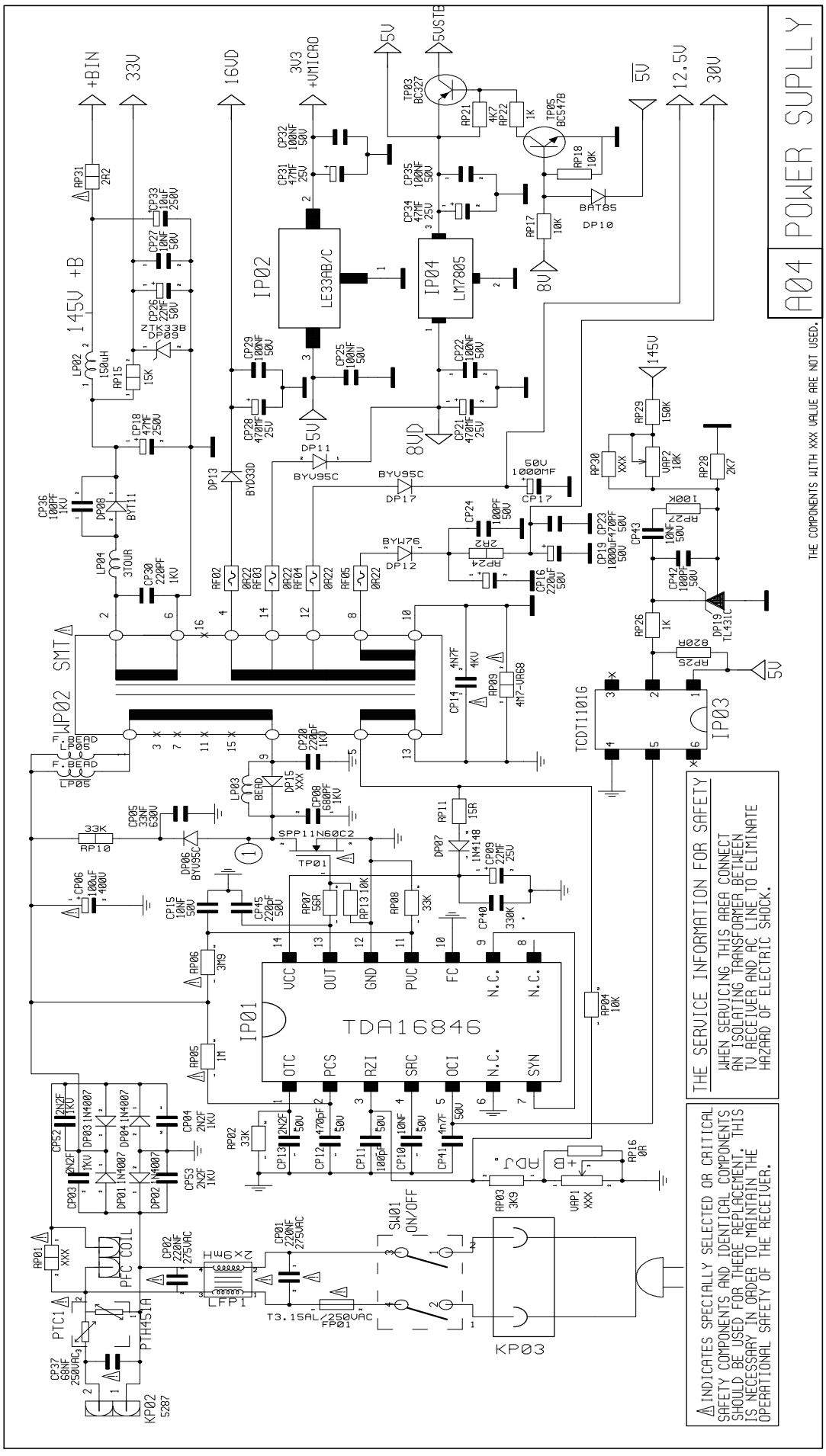

PT92P-110
LABEL1
LABEL2
LABEL3
250VAC T3.15AL
DANGER!! LIVE PART
SOLDERING DIRECTION
01TA027C
01TA081I PT92P 110
H.PHONE
LED
HORIZONTAL
SERVICE
COMPAIR CONN
EEPROM
2PIN

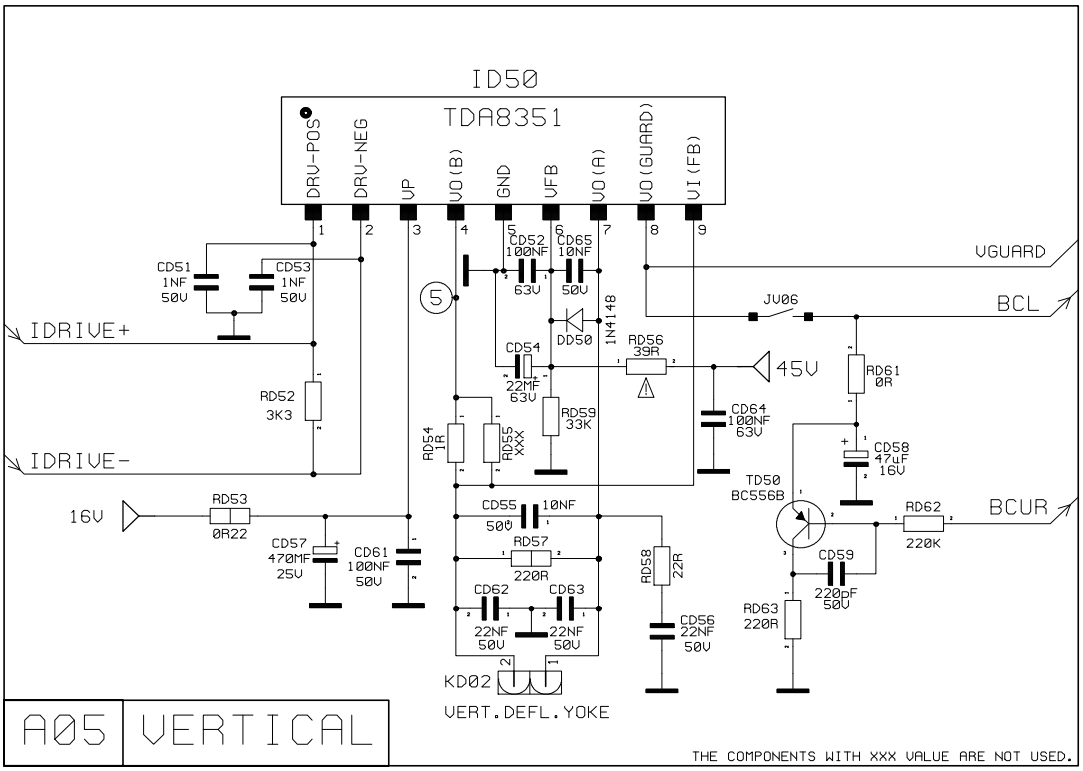

250VAC
T3.15AL
LIVE PART
DANGER!
01TA027C
R G B FB

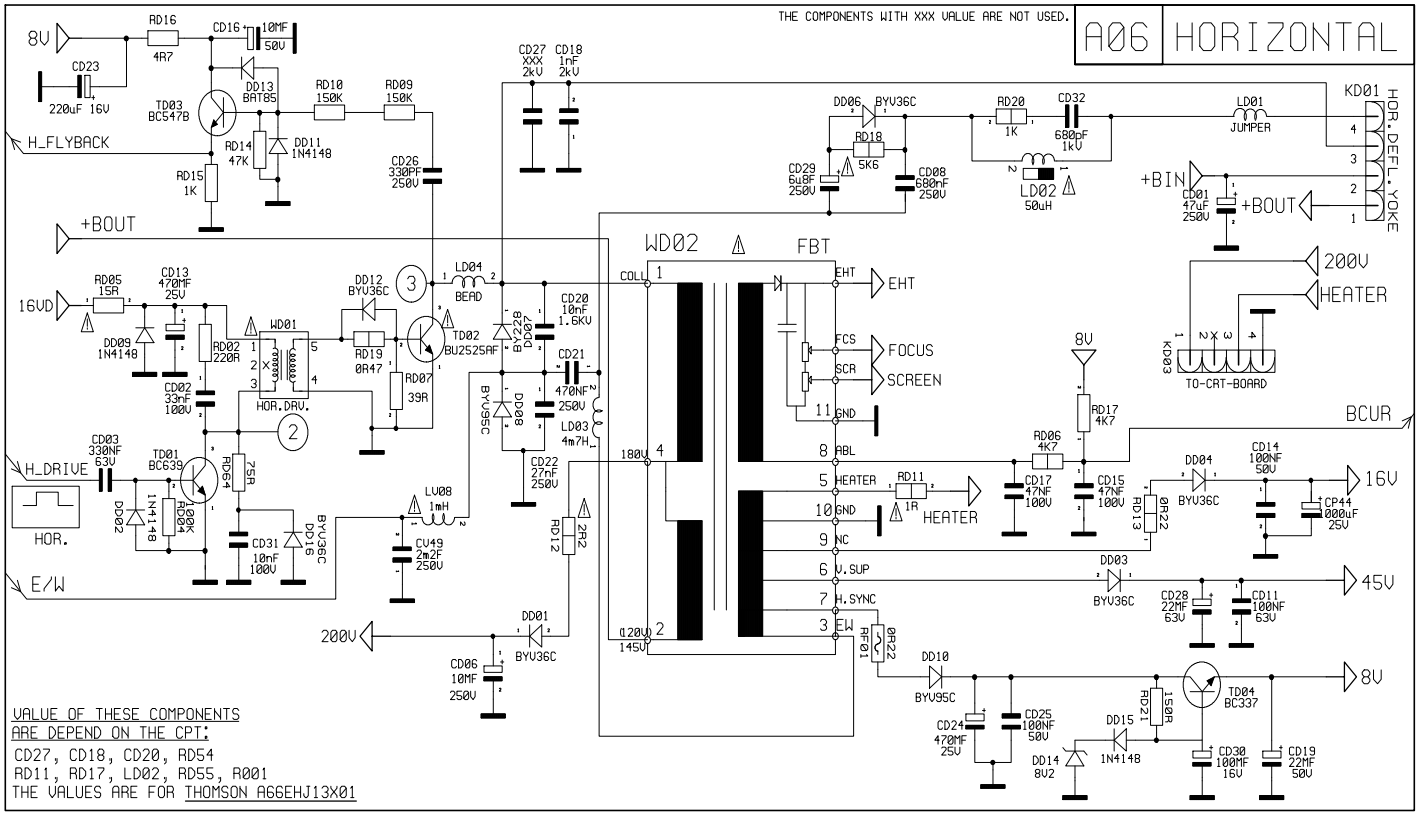

A01 uCONTROLLER+VIDEO PROCESSOR
TDA9365
tda935xa
+VMICRO
+VMEM
12.5V
5V
8V
LED
ST-BY
RMOT
SDA1
SCL1
RESET
VGUARD
BCL
BIN
GIN
RIN
FBLIN
AMOUT
CHROMA
AV.VID
QSSO
TV.VID
CVBSINT
BCUR
H_FLYBACK
H_DRIVE
SCL
SDA
CNTRL(LED+KEY)
MUTE
STAT_AV2
KEYB
STAT_AV1
AV_SW
SW1
E/WDRIVE
IDRIVE-
IDRIVE+
IF2
IF1
AGC
EX.AUD
AMOUT
WITHOUT QSS
TO_CRT
KV01
IV01
FV07
K3953M
F302
K9453M
FV06
NAME
TUNER GND
AM MONO
WITH QSS VERIONS
THE COMPONENTS WITH XXX VALUE ARE NOT USED.

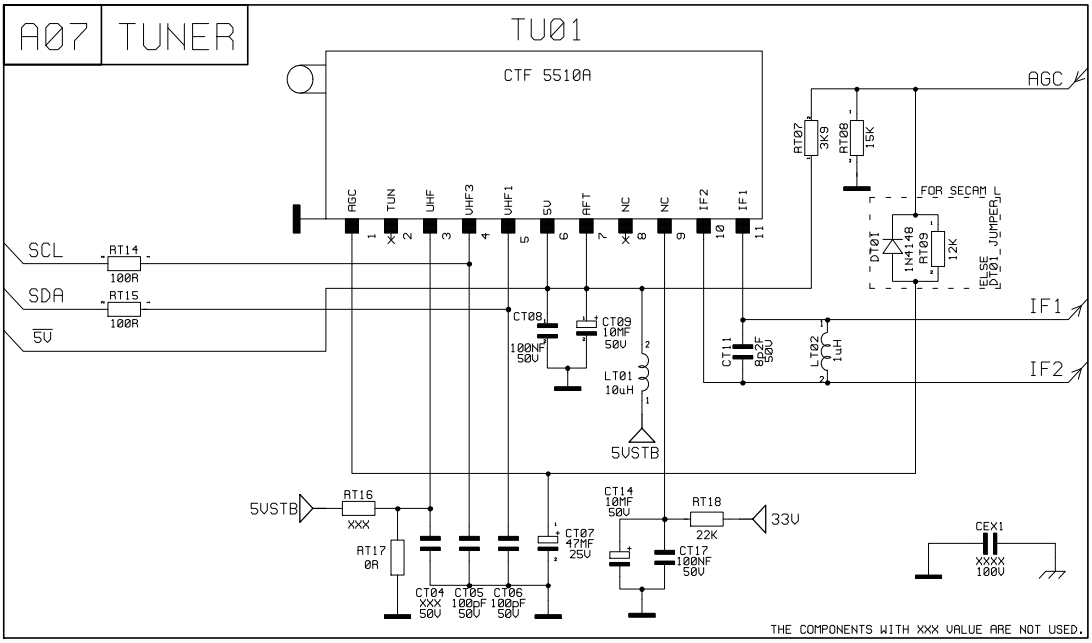

A02 CRT BOARD
S003
CRT
BLUE
GREEN
RED
EHT
GND2
G3
G2
G1
F2
GND1
VG2
S004
C008 6n8F 2KV
C001 1NF 2KV
R002 1K5
1N4007
D004
R007 1K5
R013 2M2
C005 2M2F 250V
C002 2N7F 500V
R012 330K
KB
KG
KR
R003 1K
R004 1K
R005 1K
D003 BAV21
D002 BAV21
D001 BAV21
R014 330K
C004 10µF 250V
R008 100R
R009 100R
R010 100R
D007
D005
D006
R006 47R
R001 0R47
C006 1nF 250V
L002 150µH
C003 100NF 250V
C007 1nF 250V
L001 XXX
S002
+200V
HTR
GND2
I001
TDA6107JF/N3
VOC1
VOC2
VOC3
VDDH
IOM
GND
VI3
VI2
VI1
TO_MAIN_PCB
RED
GREEN
BLUE
GND
GND
BLKIN
S001
THE COMPONENTS WITH XXX VALUE ARE NOT USED.

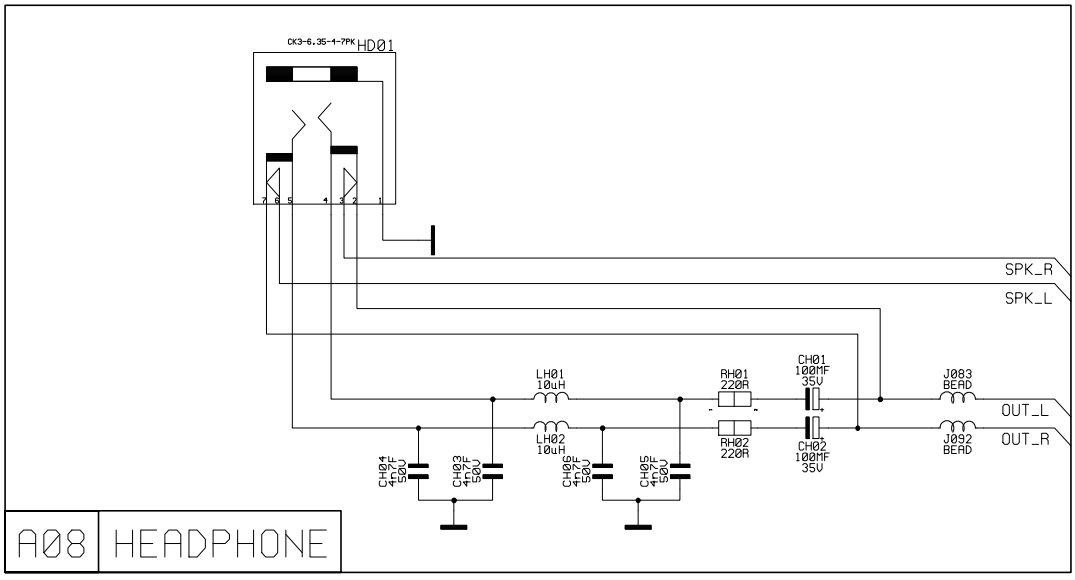

A03 SCARTS
EXT1 KE01
EXT2 KE02
CVBSEXT1
CVBSEXT2
TV.VID
THE COMPONENTS WITH XXX VALUE ARE NOT USED.
FBLIN
RIN
GIN
STAT_AV1
BIN
SC1IL
SC1IR
SC1OUTL
SC1OUTR
CHROMA
STAT_AV2
SC2IL
SC2IR
SC2OUTL
SC2OUTR
8V
4R7
100R
1K
75R
10K
3K9
12K
120PF
330pF
1NF
10MF
2N2
8u2H
BC547B
1N4148
F.BEAD
33uH

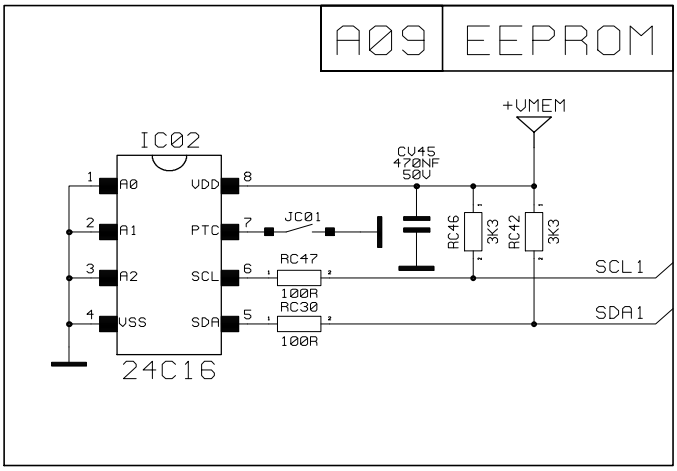

A04 POWER SUPLLY
+BIN
33V
16VD
3V3 +VMICRO
5V
5VSTB
12.5V
30V
14SV +B
8VD
IP01 TDA16846
IP02 LE33AB/C
IP04 LM7805
IP03 TCDT1101G
SMT WP02
F.BEAD LP05
LP02 150uH
LP04 3TOUR
LP03 BEAD
TP01 SPP11N60C2
TP03 BC327
TP05 BC547B
DP10 BAT85
DP11 BYV95C
DP12 BYV76
DP13 BYD33D
DP17 BYV95C
DP19 TL431C
DP01 1N4007
DP02 1N4007
DP03 1N4007
DP04 1N4007
DP07 1N4148
DP08 BYT11
DP06 BYV95C
PFC COIL
PTH451A
PTC1
KP02 5287
KP03
FP1
FP01 T3.15AL/250VAC
SW01 ON/OFF
THE COMPONENTS WITH XXX VALUE ARE NOT USED.
THE SERVICE INFORMATION FOR SAFETY
WHEN SERVICING THIS AREA CONNECT AN ISOLATING TRANSFORMER BETWEEN TV RECEIVER AND AC LINE TO ELIMINATE HAZARD OF ELECTRIC SHOCK.
⚠INDICATES SPECIALLY SELECTED OR CRITICAL SAFETY COMPONENTS AND IDENTICAL COMPONENTS SHOULD BE USED FOR THERE REPLACEMENT. THIS IS NECESSARY IN ORDER TO MAINTAIN THE OPERATIONAL SAFETY OF THE RECEIVER.

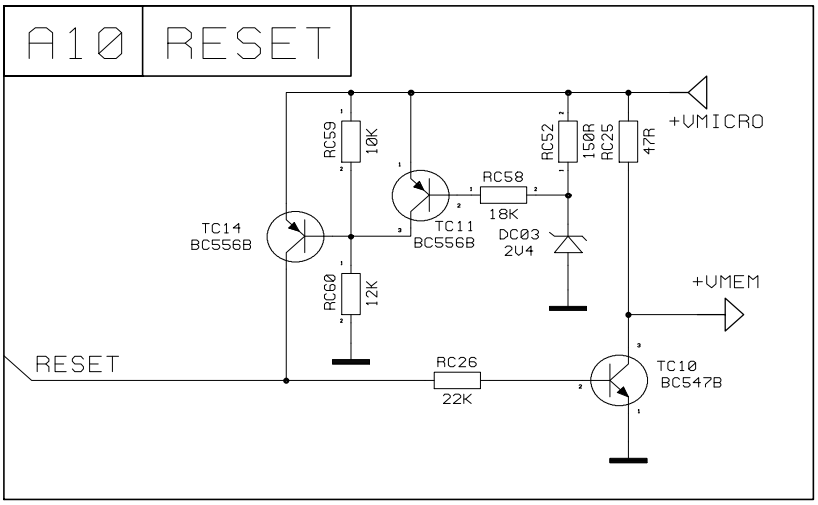

ID50
TDA8351
DRV-POS
DRV-NEG
VP
VO(B)
GND
VFB
VO(A)
VO(GUARD)
VI(FB)
VGUARD
BCL
IDRIVE+
IDRIVE-
45V
BCUR
16V
JV06
DD50
1N4148
TD50
BC556B
KD02
VERT.DEFL.YOKE
A05 VERTICAL
THE COMPONENTS WITH XXX VALUE ARE NOT USED.

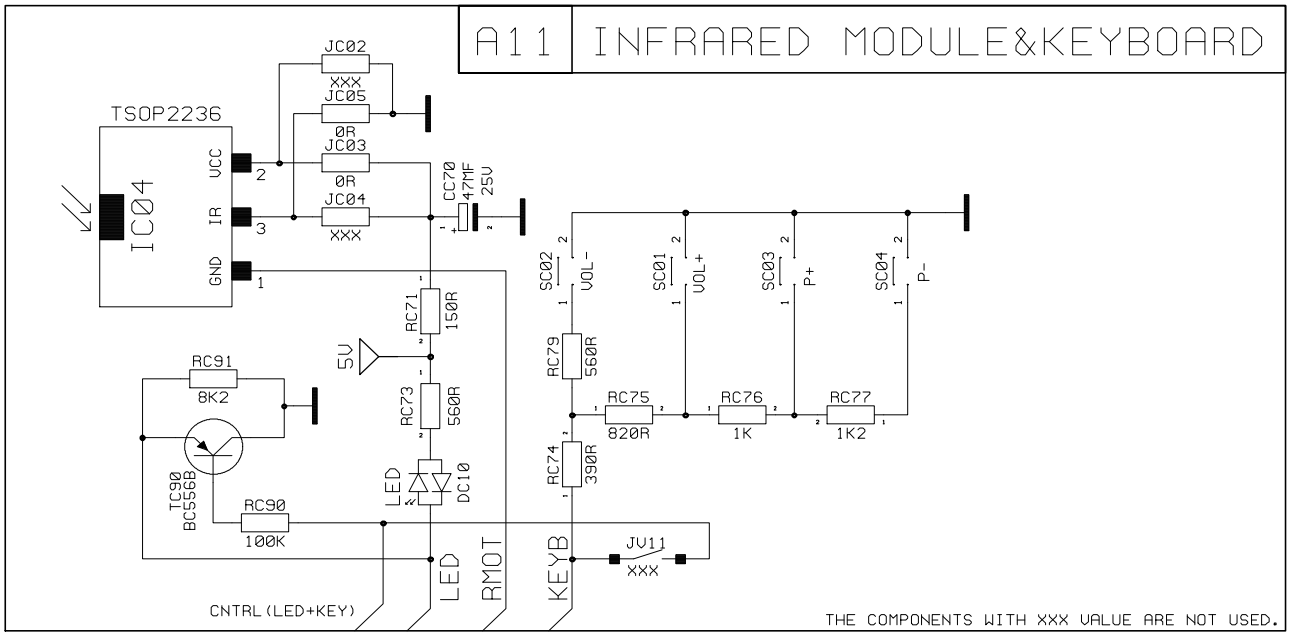

A06 HORIZONTAL
THE COMPONENTS WITH XXX VALUE ARE NOT USED.
8V
16VD
H_FLYBACK
+BOUT
+BIN
H_DRIVE
HOR.
E/W
WD02
FBT
EHT
FOCUS
SCREEN
HEATER
200V
BCUR
16V
45V
8V
KD01
HOR.DEFL.YOKE
KD03
TO-CRT-BOARD
VALUE OF THESE COMPONENTS
ARE DEPEND ON THE CPT:
CD27, CD18, CD20, RD54
RD11, RD17, LD02, RD55, R001
THE VALUES ARE FOR THOMSON A66EHJ13X01

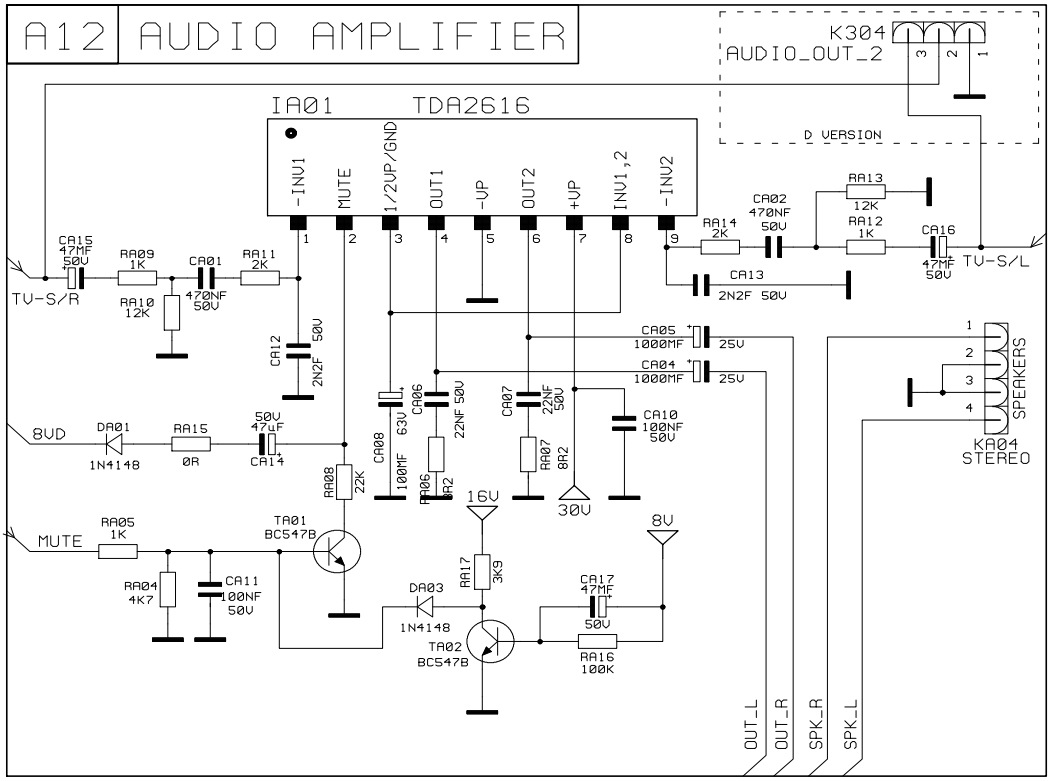

A07 TUNER
TU01
CTF 5510A
AGC
TUN
UHF
VHF3
VHF1
5V
AFT
NC
NC
IF2
IF1
SCL
SDA
5V
RT14 100R
RT15 100R
RT07 3K9
RT08 15K
FOR SECAM
DT01 1N4148
RT09 12K
!ELSE DT01_JUMPER
IF1
IF2
CT08 100NF 50V
CT09 10MF 50V
LT01 10uH
CT11 82PF 50V
LT02 1uH
5VSTB
RT16 XXX
RT17 0R
CT04 XXX 50V
CT05 100pF 50V
CT06 100pF 50V
CT07 47MF 25V
CT14 10MF 50V
RT18 22K
33V
CT17 100NF 50V
CEX1 XXXX 100V
THE COMPONENTS WITH XXX VALUE ARE NOT USED.

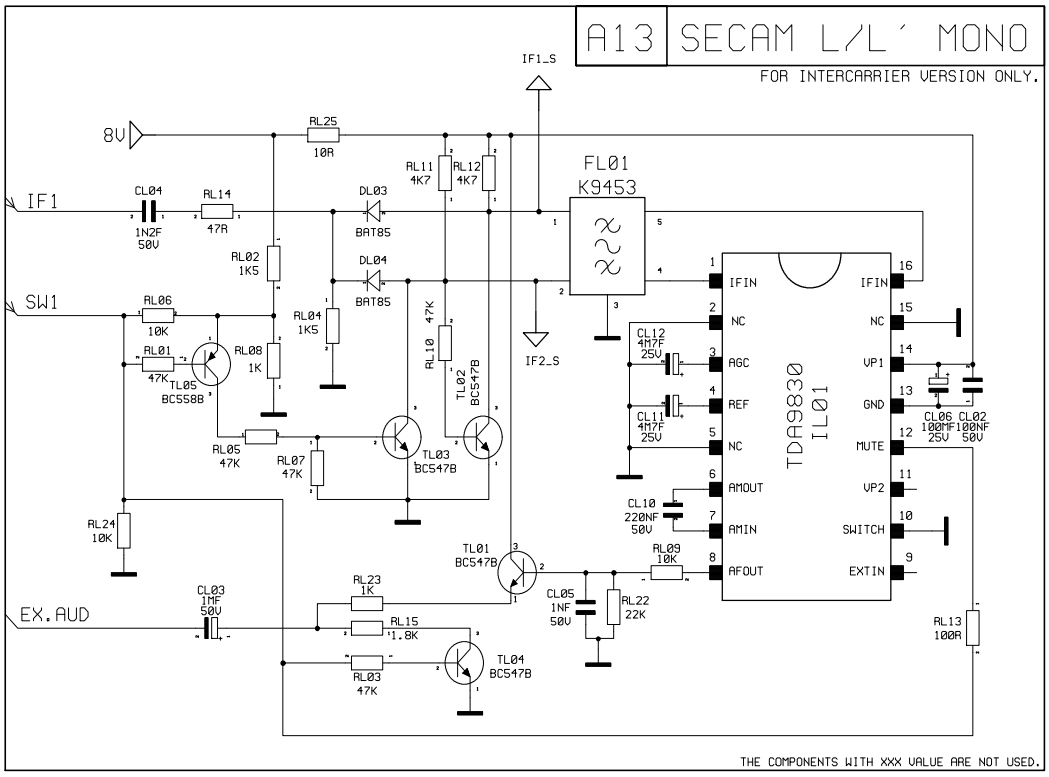

CK3-6.35-4-7PK HD01
SPK_R
SPK_L
LH01 10uH
LH02 10uH
RH01 220R
RH02 220R
CH01 100MF 35V
CH02 100MF 35V
J083 BEAD
J092 BEAD
OUT_L
OUT_R
CH04 47PF 50V
CH03 47PF 50V
CH06 47PF 50V
CH05 47PF 50V
A08 HEADPHONE

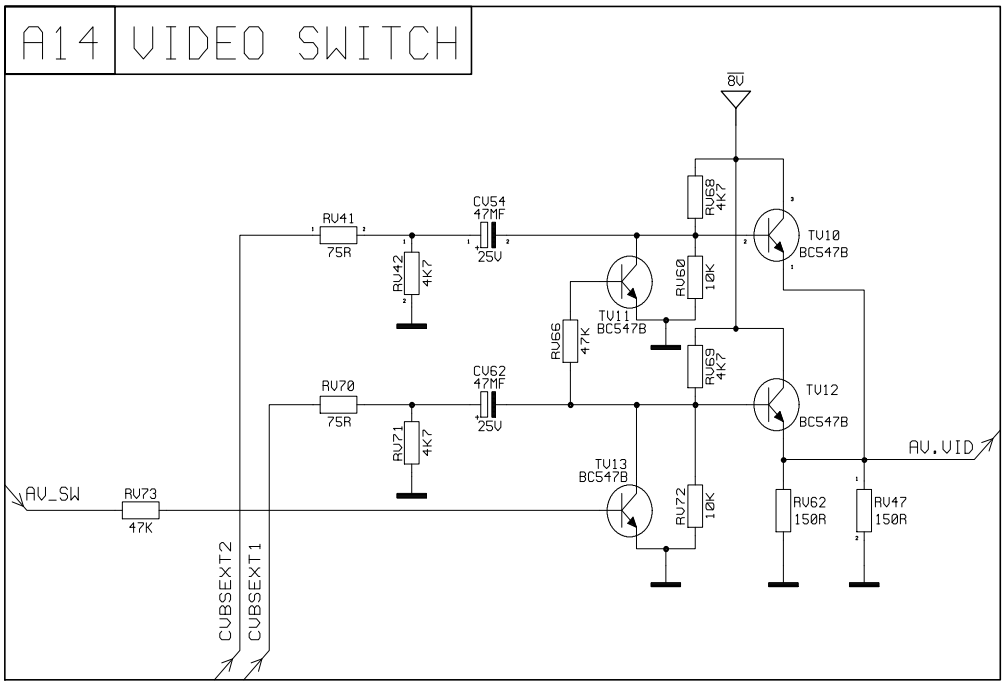

A09 EEPROM
+VMEM
IC02
CV45
470NF
50V
A0
A1
A2
VSS
VDD
PTC
SCL
SDA
JC01
RC46
3K3
RC42
3K3
RC47
100R
RC30
100R
SCL1
SDA1
24C16

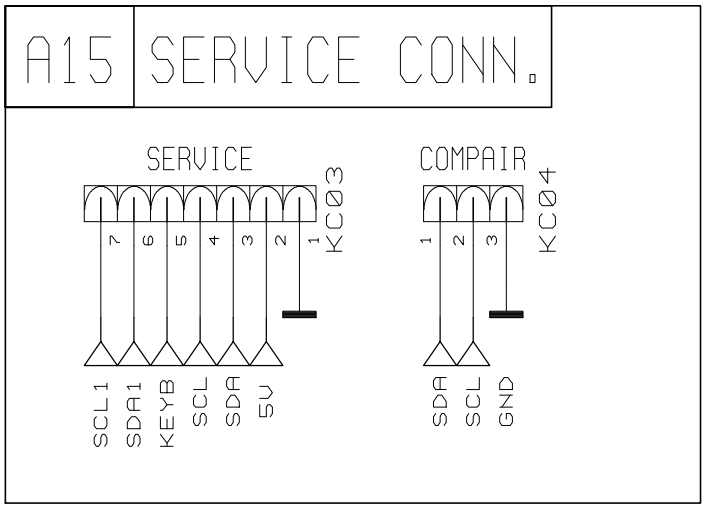

A10 RESET
+VMICRO
RC59
10K
RC52
150R
RC25
47R
RC58
18K
TC14
BC556B
TC11
BC556B
DC03
2V4
RC60
12K
+VMEM
RESET
RC26
22K
TC10
BC547B

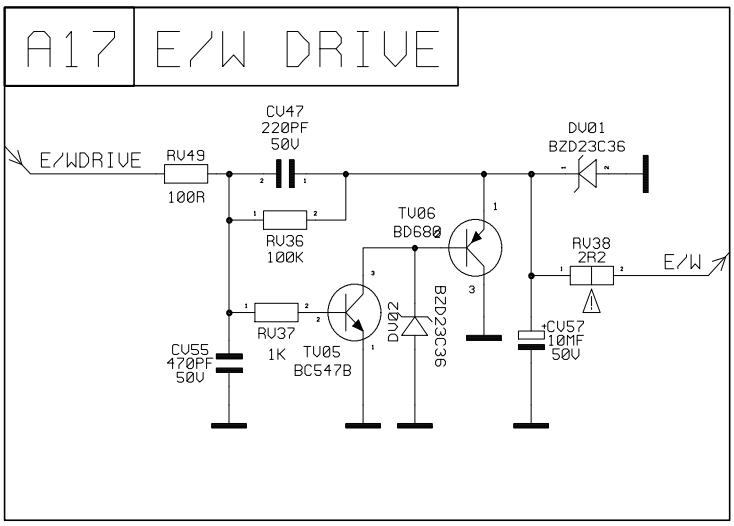

A11 INFRARED MODULE&KEYBOARD
TSOP2236
IC04
VCC
IR
GND
JC02
XXX
JC05
0R
JC03
0R
JC04
XXX
CC70
47MF
25V
5V
RC71
150R
RC73
560R
RC91
8K2
TC90
BC556B
RC90
100K
LED
DC10
SC02
VOL-
SC01
VOL+
SC03
P+
SC04
P-
RC79
560R
RC75
820R
RC76
1K
RC77
1K2
RC74
390R
JV11
XXX
CNTRL(LED+KEY)
LED
RMOT
KEYB
THE COMPONENTS WITH XXX VALUE ARE NOT USED.

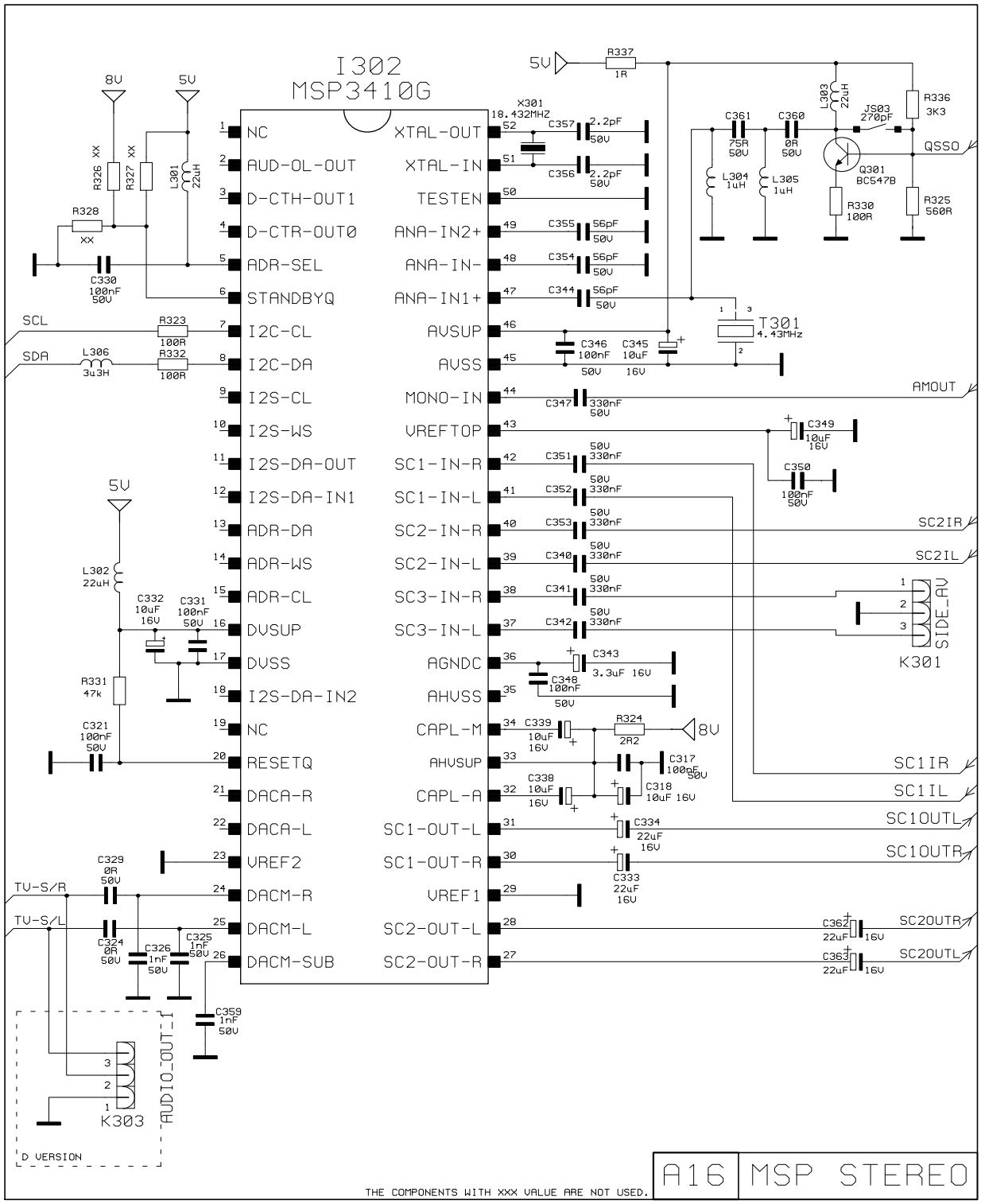

A12 AUDIO AMPLIFIER
K304
AUDIO_OUT_2
D VERSION
IA01 TDA2616
-INV1
MUTE
1/2VP/GND
OUT1
-VP
OUT2
+VP
INV1,2
-INV2
TV-S/R
TV-S/L
8VD
DA01
1N4148
MUTE
TA01
BC547B
TA02
BC547B
DA03
1N4148
16V
30V
8V
OUT_L
OUT_R
SPK_R
SPK_L
SPEAKERS
KA04
STEREO


A13 SECAM L/L´ MONO
FOR INTERCARRIER VERSION ONLY.
IF1_S
IF2_S
IF1
SW1
EX.AUD
8V
FL01
K9453
TDA9830
IL01
IFIN
NC
AGC
REF
NC
AMOUT
AMIN
AFOUT
VP1
GND
MUTE
VP2
SWITCH
EXTIN
TL01
BC547B
TL02
BC547B
TL03
BC547B
TL04
BC547B
TL05
BC558B
THE COMPONENTS WITH XXX VALUE ARE NOT USED.


A14 VIDEO SWITCH
8V
RV41
75R
CV54
47MF
25V
RV42
4K7
RV58
4K7
TV10
BC547B
RV60
10K
TV11
BC547B
RV56
47K
RV59
4K7
TV12
BC547B
RV70
75R
CV62
47MF
25V
RV71
4K7
TV13
BC547B
RV72
10K
AV.VID
AV_SW
RV73
47K
RV62
150R
RV47
150R
CVBSEXT2
CVBSEXT1


A15 SERVICE CONN.
SERVICE
KC03
7
6
5
4
3
2
1
SCL1
SDA1
KEYB
SCL
SDA
5V
COMPAIR
KC04
1
2
3
SDA
SCL
GND


A17 E/W DRIVE
E/WDRIVE
RV49
100R
CV47
220PF
50V
DV01
BZD23C36
RV36
100K
TV06
BD680
RV38
2R2
E/W
RV37
1K
TV05
BC547B
DV02
BZD23C36
CV55
470PF
50V
CV57
10MF
50V


I302
MSP3410G
NC
AUD-OL-OUT
D-CTH-OUT1
D-CTR-OUT0
ADR-SEL
STANDBYQ
I2C-CL
I2C-DA
I2S-CL
I2S-WS
I2S-DA-OUT
I2S-DA-IN1
ADR-DA
ADR-WS
ADR-CL
DVSUP
DVSS
I2S-DA-IN2
NC
RESETQ
DACA-R
DACA-L
VREF2
DACM-R
DACM-L
DACM-SUB
XTAL-OUT
XTAL-IN
TESTEN
ANA-IN2+
ANA-IN-
ANA-IN1+
AVSUP
AVSS
MONO-IN
VREFTOP
SC1-IN-R
SC1-IN-L
SC2-IN-R
SC2-IN-L
SC3-IN-R
SC3-IN-L
AGNDC
AHVSS
CAPL-M
AHVSUP
CAPL-A
SC1-OUT-L
SC1-OUT-R
VREF1
SC2-OUT-L
SC2-OUT-R
X301
18.432MHZ
C357 2.2pF 50V
C356 2.2pF 50V
C355 56pF 50V
C354 56pF 50V
C344 56pF 50V
C346 100nF 50V
C345 10uF 16V
T301
4.43MHz
R337 1R
5V
8V
R326 XX
R327 XX
L301 22uH
R328 XX
C330 100nF 50V
SCL
SDA
R323 100R
L306 3u3H
R332 100R
L303 22uH
R336 3K3
C361 75R 50V
C360 0R 50V
JS03 270pF
QSSO
L304 1uH
L305 1uH
Q301 BC547B
R330 100R
R325 560R
AMOUT
C349 10uF 16V
C350 100nF 50V
C347 330nF 50V
C351 330nF 50V
C352 330nF 50V
C353 330nF 50V
C340 330nF 50V
C341 330nF 50V
C342 330nF 50V
SC2IR
SC2IL
SIDE_AV
K301
L302 22uH
C332 10uF 16V
C331 100nF 50V
R331 47k
C321 100nF 50V
C343 3.3uF 16V
C348 100nF 50V
C339 10uF 16V
R324 2R2
C317 100nF 50V
C338 10uF 16V
C318 10uF 16V
SC1IR
SC1IL
C334 22uF 16V
C333 22uF 16V
SC1OUTL
SC1OUTR
C329 0R 50V
TV-S/R
TV-S/L
C324 0R 50V
C326 1nF 50V
C325 1nF 50V
C359 1nF 50V
C362 22uF 16V
C363 22uF 16V
SC2OUTR
SC2OUTL
AUDIO_OUT_1
K303
D VERSION
THE COMPONENTS WITH XXX VALUE ARE NOT USED.
A16
MSP STEREO

8. Alignments

Note: SERVICE MODE IS ACTIVED BY PRESSING VOLUME – ON LOCAL KEYBOARD AND TIMER BUTTON ON RC AT THE SAME TIME

This software provides menu flexibility and full control to software. Service persons can adjust the TV in all manners. In service menu, you can see simply listed parameters, software name, option bytes values, and bits. Initialisation of the software causes the clear procedure of the error buffer and writing the software name to NVM. That means if a NVM replacement occurs error buffer and software name will be achieved automatically.

In this software, program switching by menu added to service menu to create more user friendly user interface. Beside that digit are used short cuts for the some specific positions in service menu.

Start position : IF

1 : HP
2 : HP-EXP
3 : HS
4 : VSD
5 : WPR
6 : Ys
7 : OP2
8 : TSL
9 : INIT

This menu is being displayed whenever Service Menu is entered. The service engineer can use this mode to check and to change option codes and other alignments for picture, geometry, G2, and tuner adjustments. The overview of the menu is shown below:

8.1 TUNER ADJUSTMENT VARIABLES

***IF:** Intermediate frequency (58.8,45.8,38.9 or 38.00 MHz)
***IF1:** Intermediate frequency, this bit is assigned to Secam L' system. (33.4 or 33.9 MHz)
AGC : Automatic Gain Control
***TSL, TEL, TSM, TEM, TSH, THE, TBL, TBM, TBH:** These are all tuner depended variables. This set supports various tuners and all of them have specific material depended levels. Table for these settings are followed in default values section.

8.2 GEOMETRY ADJUSTMENT VARIABLES

HP, HB: These are all geometry adjustment variables based on horizontal changes of **4:3** mode. **H**orizontal **P**arallelogram, **H**orizontal **B**ow let us to make necessary changes.
HP-EXP, HB-EXP: These are all geometry adjustment variables based on horizontal changes of **4:3 EXPAND** mode. **H**orizontal **P**arallelogram**-EXP**, **H**orizontal **B**ow**-EXP**, let us to make necessary changes.
HS: This is geometry adjustment variable based on horizontal changes. **H**orizontal **S**hift let us to make necessary changes.
VA, VS, VSH: These are all geometry adjustment variables based on vertical changes. **V**ertical **A**mplitude, **V**ertical **S**lope, **V**ertical **Sh**ift are vertical variables to adjust vertical properties.

EXP-VA: This is geometry adjustment variable based on vertical changes of 4:3 EXPAND mode amplitude.

EW, PW: These are all geometry adjustment variables based on horizontal changes of **4:3** mode. **E**ast-**W**est, East-West **P**arabola **W**idth are geometry variables to adjust East-West properties.

EW-EXP, PW-EXP: These are all geometry adjustment variables based on horizontal changes of **4:3 EXPAND** mode. **E**ast-**W**est **EXP**AND, East-West **P**arabola **W**idth **EXP**AND are geometry variables to adjust East-West properties of 4:3 EXPAND mode.

UCP, LCP: These are geometry adjustment variables based on East-West upper&lower corner parabola of **4:3** mode. **U**pper **C**orner **P**arabola, **L**ower **C**orner **P**arabola let us to make necessary changes.

UCP-EXP, LCP-EXP: These are geometry adjustment variables based on East-West upper&lower corner parabola of **4:3 EXPAND** mode. **U**pper **C**orner **P**arabola **EXP**AND, **L**ower **C**orner **P**arabola **EXP**AND let us to make necessary changes.

TC: This is geometry adjustment variable based on East-West Trapezium changes of **4:3** mode.

TC-EXP: This is geometry adjustment variable based on East-West Trapezium changes of **4:3 EXPAND** mode.

VSD: Vertical scan disable off, this bit allows to make G2 adjustment. If service person selects this item, information about G2 will be displayed and will guide you to make adjustment by INCR, DECR, OK.

SC: S-Correction

8.3 PICTURE ADJUSTMENT VARIABLES

BLR, BLG: Picture quality adjustment can be achieved by means of these variables. These variables correspond to black level adjustment with red and green level. (**B**lack **L**evel **R**ed, **B**lack **L**evel **G**reen)

WPR, WPG, WPB: These are also picture quality adjustment variables correspond to white point correction with red, green and blue levels. (**W**hite **L**evel **R**ed, **W**hite **L**evel **G**reen, **W**hite **L**evel **B**lue)

Ys, Yn, Yp, Yo: These are all Y-delay adjustment for various systems. (Y-delay adjustment for SECAM, Y-delay adjustment for NTSC, Y-delay adjustment for PAL, Y-delay adjustment for external sources). Colours interferences could be prevented by these bits.
Connect a pattern to TV set and set pattern colour bar.
These bits could narrow junction line of colours.

8.4 OTHER ADJUSTMENT VARIABLES

CL: Cathode drive Level, picture quality could be improved by changing this level. There could be paled colours by time. This properties help to revive.

TXT-CL: Teletext Cathode drive Level, teletext mode and TV mode are completely different from each other, so this adjustment should be repeated for teletext mode.

H vol: Hotel Mode volume adjustment could be achieved. (Hotel Mode Volume)

8.5 OPTION BYTES

***ACL, FCO, SVO, HP2, FSL, OSO, FFI, BTSC, FMWS, BKS, IFS:** These bits are control bits of video processor explained in PDF file.

PAL-BG, PAL-DK, PAL-I, PAL-M, PAL-N, NTSC-M, NTSC-443, SECAM-BG, SECAM-DK, FRANCE: These are all supported signals. By means of these setting display setting can be adjusted according to country transmission systems.

SYS-FR: Setting one of these bit enables the selection of the corresponding system.

SYS-UK: Setting one of these bit enables the selection of the corresponding system.

***AV2, AV-S, AV3, AV3S:** Some external interfaces supported but beware of hardware necessaries. It's better the keep this bits default values

***Jr:** When set, stereo volume control via PWM-DAC's are enabled

HP: **Reserved, not used (in options)**

***Vbar:** When set, a volume bar appears at the bottom of the screen when the volume is changed and no menu or teletext is on.

SubWoof: **Reserved, not used**

***Presets:** When set, 5 separate presets for sound and video are present. When clear, only 1 preset for sound and video is available.

Lock: **Reserved, not used**

Hotel: To make the TV suitable in hotel/hospital use. In this mode some restrictions are occurs in menus. So hotel subscriber or user cannot use auto programme, volume restriction etc. (Hotel Mode)

16:9: Tube format is hardware depended bit. If your tube format is 16:9 then this bit should be set but this TV set designed in 4:3 tube.

***110:** This bit is also hardware depended bit. If your tube is 110^0 then this bit should be set but this TV set designed in 90^0 tubes.

***Hpol:** When set, the polarity of the horizontal sync for OSD is expected negative going. When clear positive going.

***Vpol:** When set, the polarity of the vertical sync for OSD is expected negative going. When clear positive going.

***Field:** When set, the vertical sync for OSD is in the second half line at the start of an even field. When clear, Vsync is in the first half line.

***FEOut:** If this bit set FE signal (CVBS) available at ext even not switched to AV source. Otherwise this signal available only after ext mode switching. (internal CVBS signal)

Swon: When set, last switch off status is used for switching on.

***VGCheck:** When set vertical guard fails and service mode is not active, the OSD is not updated.

***Clock:** Enable/Disable Clock

***AM/PM:** Only valid in combination with option "Clock". When set, the Clock is defined as a 12-hour (AM/PM) clock, when clear a 24-hour clock is used.

***AVL:** When set, automatic volume levelling is enabled.

1norma: **Reserved, not used**

***FLOF-TXT:** Toggle between the flof teletext on/off. When set, the teletext flof is on.

***TR:** When set, sound cannot be muted in weak signals

UOC-J: **Reserved, not used**

***IgnrSUP:** When set, ignore the status of SUP at power on, generally IC checks the 8V supply voltage.

***IgnrNDF:** When set, Ignore the status of NDF at power on, IC always controls the vertical guard but this properties closes it at power on.

TXT on: When set, teletext mode is available.

SYS-DK: Setting one of these bit enables the selection of the corresponding system.

WSS: When set, automatic picture mode switching is enabled according to transmission.

*It is better to keep these bits at default values for this set.

Default values are as follow;

Init PHIST	V4.19
IF	38.9
IFL1	33.9
HP	31
HB	31
EW	49
PW	21
UCP	13
LCP	13
TC	31
EXP-VA	40
HP-EXP	32
HB-EXP	31
EW-EXP	49
PW-EXP	39
UCP-EXP	1
LCP-EXP	1
TC-EXP	35
HS	28
VS	42
VA	15
SC	31
VSD	Off
VSH	27
VX	25
BLR	36
BLG	35
WPR	33
WPG	30
WPB	29
Ys	5
Yn	5
Yp	5
Yo	5
AGC	25
CL	9
Bits 0	**00**
ACL	0
FCO	0
SVO	0
HP2	0
FSL	0
OSO	0
	0
	0
Bits1	**00**
FFI	0
BTSC	0
FMWS	0
BKS	0
IFS	0
	0
	0
	0
TXT-CL	5
OP1	**83**
PAL-BG	1
PAL-DK	1
PAL-I	0
PAL-M	0
PAL-N	0
OP2	**35**
SECAM-DK	1
FRANCE	0
SYS-FR	1
SYS-UK	0
AV2	1
SVHS2	1
AV3	0
AV3S	0
OP3	**69**
PAL L	1
Jr	0
HP	0
Vbar	1
SubWoof	0
Presets	1
Lock	1
Hotel	0
OP4	**F2**
16:9	0
110	1
Hpol	0
Vpol	0
Field	1
FEOut	1
Swon	1
VGCheck	1
OP5	**A5**
Clock	1
AM/PM	0
AVL	1
	0
1norma	0
FLOF-TXT	1
TR	0
MSP-CLIP	1
OP6	**10**
UOC-J	0
ignrSUP	0
ignrNDF	0
	0
TXT on	1
East/West	0
	0
WSS	0
TSL	45
TEL	118
TSM	118
TEM	400
TSH	400
TEH	890
TBL	03
TBM	06
TBH	85
H vol	63
	0

NTSC-M	0
NTSC-443	0
SECAM-BG	1

P.S.: Blank option bits should be zero.

8.6 OPTION BYTES (ADJUSTED FOR 70TB4417/XX)

		OP1	C3																													
0		PAL-BG							1																							
1		PAL-DK							1																							
2		PAL-I							0																							
3		PAL-M							0																							
4		PAL-N							0																							
5		NTSC-M							0																							
6		NTSC-443							1																							
7		SECAM-BG							1																							

		OP2	35																													
0		SECAM-DK							1																							
1		FRANCE							0																							
2		SYS-FR							1																							
3		SYS-UK							0																							
4		AV2							1																							
5		SVHS2							1																							
6		AV3							0																							
7		AV3S							0																							

		OP3	69																													
0		PAL	L						1																							
1		JR							0																							
2		HP							0																							
3		VBar							1																							
4		SUbwoof							0																							
5		PResets							1																							
6		LOck							1																							
7		HTM							0																							

		OP4	F2																													
0		16:9							0																							
1		110							1																							
2		Hpol							0																							
3		Vpol							0																							
4		Field							1																							
5		FEOut							1																							
6		Swon							1																							
7		VGCheck							1																							

		OP5			A5																										
0			Clock							1																					
1			AM-PM							0																					
2			AVL							1																					
3										0																					
4			1normA							0																					
5			FLOF-TXT							1																					
6			TR							0																					
7			MSP-CLIP							1																					

		OP6			10																										
0			UOC-J							0																					
1			Ignr SUP							0																					
2			Ignr NDF							0																					
3										0																					
4			TXT		oN					1																					
5			EAST/WEST							0																					
6										0																					
7			WSS							0																					

8.7 ADJUSTMENTS

You will need following equipments to carry out the adjustment procedures;

a- PLL Pattern generator for Secam L'
b- PLL Pattern generator PAL BG
c- Patern generator for white pattern
d- Color Analyzer (CA100)

8.7.1. GEOMETRY ADJUSTMENT

a. HP, HP-EXP
b. HB, HB-EXP
c. HS
d. VA, EXP-VA
e. VS
f. VSH
g. EW, EW-EXP
h. PW, PW-EXP
i. UCP,UCP-EXP
j. LCP, LCP-EXP
k. TC, TC-EXP

Geometry alignments help us to change the geometry of displayed picture. Position of picture could also be redefined by using those alignments.

HP: Horizontal Parallelogram 4:3
HP-EXP: Horizontal Parallelogram 4:3 EXPAND
HB: Horizontal Bow 4:3
HB-EXP: Horizontal Bow 4:3 EXPAND
HS: Horizontal Shift
VA: Vertical amplitude 4:3

EXP-VA: Vertical amplitude 4:3 EXPAND
VS: Vertical slope
VSH: Vertical shift
EW: East West width for picture setting 4:3
EW-EXP: East West width for picture setting 4:3 EXPAND
PW: East West parabola for picture setting 4:3
PW-EXP: East West parabola for picture setting 4:3 EXPAND
UCP: East West corner parabola upper for picture setting 4:3
UCP-EXP: East West corner parabola upper for picture setting 4:3 EXPAND
LCP: East West corner parabola lower for picture setting 4:3
LCP-EXP: East West corner parabola lower for picture setting 4:3 EXPAND
TC: Trapezium 4:3
TC-EXP: Trapezium 4:3 EXPAND

- Set pattern generator to crosshatch pattern
- Connect a pattern generator to TV, detect the transmission
- Enter service menu and adjust the geometry settings; HP, HB, HS, VA, VS, VSH, EW, PW, UCP, LCP, TC, HP-EXP, HB-EXP, EXP-VA, EW-EXP, PW-EXP, UCP-EXP, LCP-EXP, TC-EXP
- Press menu button to leave service menu

8.7.2 G2 ADJUST ADJUSTMENT

- Enter the service menu and activate VSD selection
- Turn the G2 potentiometer on FBT until you get OK sign on CRT
- Directions will guide the service engineer as DECR, INCR

8.7.3. VIDEO (PICTURE) ADJUSTMENT

1 BLR
2 BLG
3 WPR
4 WPG
5 WPB

Video items are used for getting better quality picture in the sense of color.
BLR: Black Level Red
BLG: Black Level Green
WPR: White Level Red
WPG: White Level Green
WPB: White Level Blue
Ys, Yn, Yp, Yo: These are all Y-delay adjustment for various systems. (Y-delay adjustment for SECAM, Y-delay adjustment for NTSC, Y-delay adjustment for PAL, Y-delay adjustment for external sources). Colours interferences could be prevented by means of these bits. These bits could narrow junction line of colours

- Connect a pattern to TV set and set pattern colour bar, white pattern at 100 IRE, black pattern (Dark gray pattern at 10 IRE), sequentially.
- Contrast 70%, brightness middle, color saturation middle
- Video parameters, BLR, BLG, WPR, WPG, WPB, Ys, Yn, Yp, Yo, could be adjusted in this condition

CL: Cathode drive Level, picture quality could be improved by changing this level. There could be paled colours by time. This properties help to solve problem.
TXT-CL: Teletext Cathode drive Level, teletext mode and TV mode are completely different from each other, so this adjustment should be repeated for teletext mode.

Remark: It may be necessary after low light alignment to check and to re-align the high light and to repeat several times the procedure to obtain good alignment for both low and high light.

8.8 TUNER / IF ALIGNMENT

1. IF
2. IF1
3. TSL
4. TEL
5. TSM
6. TEM
7. TSH
8. THE
9. TBL
10. TBM
11. TBH

In the case of tuning problem, tuning properties could be adjustable.

IF: Intermediate frequency (58.8,45.8,38.9 or 38.00 MHz)

IF1: Intermediate frequency, this bit is assigned to Secam L' system. (33.4 or 33.9 MHz)

AGC : Automatic Gain Control

TSL, TEL, TSM, TEM, TSH, THE, TBL, TBM, TBH: These are all tuner depended variables. This set supports various tuners and all of them have specific material depended levels. Table for these settings are followed in default values section. (Start frequency of the low-band, end frequency of the low-band, start frequency of the mid-band, end frequency of the mid-band, start frequency of the high-band, end frequency of the high-band, hex value for switching to the low-band, hex value for switching to the mid-band, hex value for switching to the high-band)

	Tuner Parameter in Service Menu	**PHILIPS**	**OREGA**	**SAMSUNG**	**ALPS**
TSL	Start Frequency of the low-band in MHz	45	45	45	45
TEL	End Frequency of the low-band in MHz	160	118	150	180
TSM	Start Frequency of the mid-band in MHz	160	118	150	180
TEM	End Frequency of the mid-band in MHz	440	400	427	465
TSH	Start Frequency of the high-band in MHz	440	400	427	465
TEH	End Frequency of the high-band in MHz	890	890	890	890
TBL	hex Value needed for switching to the low-band	A1	3	1	1
TBM	hex Value needed for switching to the mid-band	92	6	2	2
TBH	hex Value needed for switching to the high-band	34	85	0C	0C

8.9 HTM

Installation and Child Lock Menus are omitted in HTM. You can not search any channel when the HTM is activated.

Volume level cannot be increased higher then certain level in HTM. The volume limiting level is a pre-defined value in service menu.

8.10 SYSTEM VOLTAGE ADJUSTMENT

- Switch the TV in AV mode by pressing AV button on remote control unit. (Minimum beam current condition)
- Adjust the VAP2 potentiometer until 145Vdc measured on cathode pin of DP08 diode.
- Please check the other test points and required voltages.

9. Circuit Descriptions

9.1 Descriptions

No descriptions avaialble

9.2 ABBREVIATIONS

+BIN	System voltage
+VMEM	Eeprom voltage
AGC	Auto Gain Control
AMOUT	AM sound output
AV.SW	External Video Switch
AV.VID	Switched Video signal from AV
B/G-SND	BG Sound
BCL	Beam Current Limiter
BCUR	Beam Current
BIN	Blue in
BLKIN	Black Current Input
BLUE	Blue component of picture
CHROMA	Chroma input
CNTRL(LED+KEY)	Control signal of IR and keyboard
CVBSEXT1	External Composite Video Signal 1
CVBSEXT2	External Composite Video Signal 2
CVBSINT	Internal CVBS signal
E.AUD	ExternalAudio
E/W	East West
E/WDRIVE	East West Drive
EX.AUD	External audio
FBLIN	Fast blanking in
FOCUS	Focus adjustment
GIN	Green in
GND	Ground
GREEN	Green component of picture
H_DRIVE	Horizontal Drive
H_FLYBACK	Horizontal Flayback
HEATER	Heater of the tube
HTR	Heater of the tube
IDRIVE-	Vertical drive -
IDRIVE+	Vertical drive +
IF1	Intermediate Frequency 1
IF1_S	Intermediate frequency 1
IF2	Intermediate Frequency 2
IF2_S	Intermediate frequency 2
KEYB	Front panel keyboard
LED	IR signal
MUTE	Mute signal
OUT_L	Headphone sound signal left
OUT_R	Headphone sound signal right
QSSO	QSS Output
RED	Red component of picture
RESET	Reset signal
RIN	Red in
RMOT	Remote Control
SC1IL	Scart1 sound input left

SC1IR	Scart1 sound input right
SC1OUTL	Scartout Left
SC1OUTR	Scartout Right
SC2IL	Scart2 sound input left
SC2IR	Scart2 sound input right
SC2OUTL	Scart2 output left
SC2OUTR	Scart2 output right
SCL	Clock bus
SCL1	Clock bus 1
SCREEN	FBT screen adjustment
SDA	Data bus
SDA1	Data bus 1
SPK_L	Speaker left
SPK_R	Speaker right
ST_BY	Standby
STAT_AV1	Pin 8 status of scart 1
STAT_AV2	Pin 8 status of scart 2
SW1	IF Switch for L/L’
TV_S/L	TV sound left
TV_S/R	TV sound right
TV_VID	TV video
VGUARD	Vertical guard voltage

10. Spare Parts List

Main panel

Various

	0020 272 32250	Cable 300mm h
	0020 411 00130	CABLE 4P*1SKT HOP.COLOURED 50X
	0020 411 00200	CABLE 4P*1SK HOP. PRINTED 60X7
	0023 443 50241	CABLE VERTICAL.COLOUREDI PHL35
	0025 215 17190	CABLE HOLDERLI 6PX2SKT 42CM
	0025 285 54011	Mains cord 220cm
	0050 510 84620	Insulating plate 13x23mm
	0050 510 84631	Bead
	0360 160 10071	Ferrite ring 31x7x19
	0674 200 01811	FUSE 3.15A 250V TIME-LAG SFTY
	0707 224 16591	A66EHJ13X01 FST VCOLOR
	0751 102 11050	FUSE HOLDER BLUE 3.15AMP.SFTY
	4822 130 41275	BY228
	6080 000 02291	COIL CHOKE 38MH 1.2A PFC
	6085 800 03660	COIL DEG.28'CPT 18R SFTY
	6103 081 70021	SPEAKER 16R 5W 126X58MMPHILIPS
	6310 200 92101	R/C RCLE013A STR TXT PHILPS
F302	0377 300 07771	SAW K9453M
FV06	4822 242 10254	TPWA02B-TF21
FV07	0377 300 07801	Filter SAW K3953M
HD01	0750 164 20221	Socket headphone
PTC1	0347 103 03651	THERM PTC 18R 30% 3P 10MM SFTY
S003	0750 208 00031	CRT socket Narrow neck
SC01	0811 011 14031	Tact switch h
SC02	0811 011 14031	Tact switch h
SC03	0811 011 14031	Tact switch h
SC04	0811 011 14031	Tact switch h
SW01	0810 000 00141	Mains switch
TU01	6168 000 20001	Tuner CTT5020E/CTF5510
X301	0490 300 00541	Xtal 18.432MHz HC49U
XV01	0490 300 00091	Xtal 12.000 MHz

3

C--F	0020 205 11270	CABLE DOUBLETERM.SYH 9CM KLT.
C001	0400 401 71021	1nF 10% 2kV
C002	0400 405 00271	CAP CER 2.7NF 500V 10% B
C003	6200 030 51041	CAP MKT 100NF 250VDC 10% 15MM
C004	0424 408 61061	10oF 20% 250V
C005	0424 468 62251	2.2oF 20% 250V
C006	0400 461 51021	1nF 10% 1kV
C007	0400 461 51021	1nF 10% 1kV
C008	0400 400 26861	CAP CER 6.8NF 2KV 10% B
C317	0400 670 41081	100nF 20% 50V 0805
C318	0424 465 01061	10oF 20% 50V
C321	0400 670 41861	CAP CER 680NF 16V 20% 0603
C324	4822 051 30008	Jumper 0603
C325	5322 126 11578	1nF 10% 50V 0603
C326	5322 126 11578	1nF 10% 50V 0603
C329	4822 051 30008	Jumper 0603
C330	0400 670 41081	100nF 20% 50V 0805
C331	0400 670 41081	100nF 20% 50V 0805
C332	0424 465 01061	10oF 20% 50V
C333	0424 165 02261	22oF 20% 50V
C334	0424 165 02261	22oF 20% 50V
C338	0424 465 01061	10oF 20% 50V
C339	0424 465 01061	10oF 20% 50V
C340	0400 520 43381	330nF 20-80% 50V 0805
C341	0400 520 43381	330nF 20-80% 50V 0805
C342	0400 520 43381	330nF 20-80% 50V 0805
C343	0420 339 01011	3.3oF 20% 50V
C344	0400 430 45661	56pF 5% 50V 0603
C345	0424 465 01061	10oF 20% 50V
C346	0400 670 41081	100nF 20% 50V 0805
C347	0400 520 43381	330nF 20-80% 50V 0805
C348	0400 670 41081	100nF 20% 50V 0805
C349	0424 465 01061	10oF 20% 50V
C350	0400 670 41081	100nF 20% 50V 0805
C351	0400 520 43381	330nF 20-80% 50V 0805
C352	0400 520 43381	330nF 20-80% 50V 0805
C353	0400 520 43381	330nF 20-80% 50V 0805
C354	0400 430 45661	56pF 5% 50V 0603
C355	0400 430 45661	56pF 5% 50V 0603
C356	0400 320 42281	2.2pF 5% 50V 0805
C357	0400 320 42281	2.2pF 5% 50V 0805
C359	5322 126 11578	1nF 10% 50V 0603
C360	4822 051 30008	Jumper 0603
C361	4822 051 30008	Jumper 0603
C362	0424 165 02261	22oF 20% 50V
C363	0424 165 02261	22oF 20% 50V
C372	5322 126 11578	1nF 10% 50V 0603
CA01	2020 552 96684	470nF 10% 25V 0805
CA02	2020 552 96684	470nF 10% 25V 0805
CA04	0424 402 51081	1000oF 20% 25V
CA05	0424 402 51081	1000oF 20% 25V
CA06	0400 400 42261	22nF 20% 50V 0603
CA07	0400 400 42261	22nF 20% 50V 0603
CA08	0424 463 51071	CAP ELECT 100MF 35V 20%
CA10	0400 670 41081	100nF 20% 50V 0805
CA11	0400 670 41081	100nF 20% 50V 0805
CA12	4822 126 14238	2.2nF 50V 0603
CA13	4822 126 14238	2.2nF 50V 0603
CA14	0424 485 04761	47oF 20% 50V
CA15	0424 485 04761	47oF 20% 50V
CA16	0424 485 04761	47oF 20% 50V
CA17	0424 485 04761	47oF 20% 50V
CC70	0424 142 54761	47oF 20% 25V
CD01	9965 000 20812	47oF 20% 250V
CD02	6210 030 03331	CAP KT 33NF 100V 5% 5MM
CD03	5322 121 42661	330nF 5% 63V
CD06	0424 408 61061	10oF 20% 250V
CD08	6200 030 46801	CAP MKP 680NF 400V 5%15-22.5MM
CD11	6200 130 81041	100nF 5% 63V
CD13	0424 492 54771	470oF 20% 25V
CD14	0400 670 41081	100nF 20% 50V 0805
CD15	6210 040 04731	47nF 100V
CD16	0424 465 01061	10oF 20% 50V
CD17	6210 040 04731	47nF 100V
CD18	0400 401 71021	1nF 10% 2kV
CD19	0424 165 02261	22oF 20% 50V
CD20	6193 238 71031	CAP MKP 10NF 1.6KV 3.5%15-25MM
CD21	6200 130 54741	470nF 5% 250V
CD22	6200 031 02731	CAP MKP 27NF 1KV 5% 15-27.5MM
CD23	0424 171 62271	Capacitor
CD24	0424 492 54771	470oF 20% 25V
CD25	0400 670 41081	100nF 20% 50V 0805
CD26	0400 402 53311	330pF 250V
CD28	0424 166 32261	22oF 63V
CD29	0424 685 14791	6.8oF 250V
CD30	0421 401 61071	100oF 20% 16V
CD31	6200 040 01051	10nF 50V
CD32	0400 401 56811	680pF 10% 1kV
CD51	0400 520 44881	CAP CER 470PF 50V 5% COG 0805
CD52	6200 130 81041	100nF 5% 63V
CD53	0400 520 44881	CAP CER 470PF 50V 5% COG 0805
CD54	0424 166 32261	22oF 63V
CD56	6180 130 12231	22nF 50V
CD57	0424 492 54771	470oF 20% 25V
CD58	0424 141 64761	CAP ELECT 47MF 16V 20%
CD59	4822 126 13883	220pF 5% 50V
CD61	0400 670 41081	100nF 20% 50V 0805
CD64	6200 130 81041	100nF 5% 63V
CD65	5322 126 11583	10nF 10% 50V 0603
CE01	0424 465 01061	10oF 20% 50V
CE02	5322 126 11578	1nF 10% 50V 0603
CE03	5322 126 11578	1nF 10% 50V 0603
CE04	5322 126 11578	1nF 10% 50V 0603
CE05	5322 126 11578	1nF 10% 50V 0603
CE07	5322 126 11578	1nF 10% 50V 0603
CE08	5322 126 11578	1nF 10% 50V 0603
CE11	0424 465 01061	10oF 20% 50V
CE15	5322 122 33861	120pF 10% 50V
CE16	5322 122 33861	120pF 10% 50V
CE18	0400 402 53361	330pF 10% 50V 0603
CE19	0400 402 53361	330pF 10% 50V 0603
CE20	4822 126 14238	2.2nF 50V 0603
CE21	4822 126 14238	2.2nF 50V 0603
CE22	0400 402 53361	330pF 10% 50V 0603
CE24	0400 402 53361	330pF 10% 50V 0603
CE26	5322 122 33861	120pF 10% 50V
CH01	0424 463 51071	CAP ELECT 100MF 35V 20%
CH02	0424 463 51071	CAP ELECT 100MF 35V 20%
CH03	4822 126 13193	4.7nF 10% 63V
CH04	4822 126 13193	4.7nF 10% 63V
CH05	4822 126 13193	4.7nF 10% 63V
CH06	4822 126 13193	4.7nF 10% 63V
CP01	6200 040 62241	220nF 20% 275V
CP02	6200 040 62241	220nF 20% 275V
CP03	0400 401 52211	2.2nF 10% 1kV
CP04	0400 401 52211	2.2nF 10% 1kV
CP05	6200 041 33331	33nF 5% 630V
CP06	0427 199 01071	100oF 20% 400V
CP08	6200 031 46811	680pF 10% 2kV
CP09	0424 165 02261	22oF 20% 50V
CP10	5322 126 11583	10nF 10% 50V 0603
CP11	0407 320 41081	100pF 5% 50V 0805
CP12	0400 520 44861	470pF 5% 50V 0603
CP13	4822 126 14238	2.2nF 50V 0603
CP14	0402 587 64721	4.7nF 20% 400V
CP15	5322 126 11583	10nF 10% 50V 0603
CP16	0424 406 31181	CAP ELECT 1000MF 50V 20%
CP18	9965 000 20812	47oF 20% 250V
CP19	0424 406 31181	CAP ELECT 1000MF 50V 20%

CP20	0400 401 72231	CAP CER 220PF 1KV 10% BN
CP21	0424 492 54771	470oF 20% 25V
CP22	0400 670 41081	100nF 20% 50V 0805
CP25	0400 670 41081	100nF 20% 50V 0805
CP26	0424 165 02261	22oF 20% 50V
CP28	0424 492 54771	470oF 20% 25V
CP29	0400 670 41081	100nF 20% 50V 0805
CP30	0400 401 72231	CAP CER 220PF 1KV 10% BN
CP31	0424 142 54761	47oF 20% 25V
CP32	0400 670 41081	100nF 20% 50V 0805
CP33	0424 408 61061	10oF 20% 250V
CP34	0424 142 54761	47oF 20% 25V
CP35	0400 670 41081	100nF 20% 50V 0805
CP36	0400 501 51011	100pF 1kV
CP37	6200 050 76831	68nF 20% 275V
CP40	4822 051 30334	330kY 5% 0.062W
CP41	4822 126 13193	4.7nF 10% 63V
CP42	0407 320 41081	100pF 5% 50V 0805
CP43	5322 126 11583	10nF 10% 50V 0603
CP44	0424 402 51081	1000oF 20% 25V
CP45	4822 126 13883	220pF 5% 50V
CP52	0400 401 52211	2.2nF 10% 1kV
CP53	0400 401 52211	2.2nF 10% 1kV
CT05	0407 320 41081	100pF 5% 50V 0805
CT06	0407 320 41081	100pF 5% 50V 0805
CT07	0424 142 51071	100oF 20% 25V
CT08	0400 670 41081	100nF 20% 50V 0805
CT09	0424 465 01061	10oF 20% 50V
CT14	0424 465 01061	10oF 20% 50V
CT17	0400 670 41081	100nF 20% 50V 0805
CV01	0424 465 01061	10oF 20% 50V
CV03	0400 670 41081	100nF 20% 50V 0805
CV04	0424 465 01061	10oF 20% 50V
CV06	0424 465 01061	10oF 20% 50V
CV07	0400 670 41081	100nF 20% 50V 0805
CV08	4822 126 11785	47pF 5% 50V 0603
CV10	0400 670 41081	100nF 20% 50V 0805
CV11	6210 040 04731	47nF 100V
CV12	0424 465 02251	2.2oF 20% 50V
CV13	0400 670 41081	100nF 20% 50V 0805
CV14	6210 030 04731	47nF 5% 50V
CV15	6210 030 04731	47nF 5% 50V
CV16	0421 401 61071	100oF 20% 16V
CV17	0400 670 41081	100nF 20% 50V 0805
CV18	0421 401 61071	100oF 20% 16V
CV19	6200 040 72241	220nF 10% 63V
CV20	6200 040 72241	220nF 10% 63V
CV21	0400 420 44861	47nF 10% 50V 0603
CV22	0400 420 44861	47nF 10% 50V 0603
CV23	0400 420 44861	47nF 10% 50V 0603
CV26	5322 126 11583	10nF 10% 50V 0603
CV27	0421 401 61071	100oF 20% 16V
CV28	6200 130 81041	100nF 5% 63V
CV29	5322 126 11578	1nF 10% 50V 0603
CV30	2020 552 93683	1.2nF 10% 50V 0603
CV31	2020 552 93683	1.2nF 10% 50V 0603
CV33	4822 126 13193	4.7nF 10% 63V
CV34	0424 165 01051	1oF 20% 50V
CV35	4822 126 14238	2.2nF 50V 0603
CV36	0424 465 01061	10oF 20% 50V
CV37	0400 430 45661	56pF 5% 50V 0603
CV38	0400 430 45661	56pF 5% 50V 0603
CV39	0400 670 41081	100nF 20% 50V 0805
CV40	0400 670 41081	100nF 20% 50V 0805
CV41	0421 401 61071	100oF 20% 16V
CV42	0421 401 61071	100oF 20% 16V
CV43	0407 320 41081	100pF 5% 50V 0805
CV44	0407 320 41081	100pF 5% 50V 0805
CV45	2020 552 96684	470nF 10% 25V 0805
CV47	4822 126 13883	220pF 5% 50V
CV48	9965 000 12523	0.22oF 20% 50V
CV49	6200 030 52231	CAP MKP 2.2MF 250V 5% 27.5MM
CV50	5322 126 11578	1nF 10% 50V 0603
CV51	0400 310 46861	CAP CER 68PF 50V 5% COG 0603
CV54	0424 142 54761	47oF 20% 25V
CV55	0400 520 44861	470pF 5% 50V 0603
CV56	0421 401 61071	100oF 20% 16V
CV58	0424 465 02251	2.2oF 20% 50V
CV61	4822 126 14238	2.2nF 50V 0603
CV62	0424 142 54761	47oF 20% 25V
CV63	0400 310 42261	22pF 5% 50V 0603
CV64	5322 126 11583	10nF 10% 50V 0603
CV65	9965 000 12523	0.22oF 20% 50V
CV66	4822 126 14238	2.2nF 50V 0603
CV67	4822 126 14238	2.2nF 50V 0603

2

4KBN	9051 022 80620	COLOURED CABIN.28' PT 4365 (10
R001	0301 056 47811	0.47Y 5% 1W
R002	0300 507 15221	1.5kY 1/2W
R003	0300 507 10221	RES. C. COMP 1K 1/2W 10%
R004	0300 507 10221	RES. C. COMP 1K 1/2W 10%
R005	0300 507 10221	RES. C. COMP 1K 1/2W 10%
R007	0300 507 15221	1.5kY 1/2W
R008	0300 206 10131	100Y 5% 1/4W
R009	0300 206 10131	100Y 5% 1/4W
R010	0300 206 10131	100Y 5% 1/4W
R012	0300 206 33411	330kY 5% 1/4W
R013	0300 206 22511	2.2MY 5% 1/4W
R014	0300 206 33411	330kY 5% 1/4W
R323	4822 051 30101	100Y 5% 0.062W
R324	0300 206 22911	2.2Y 5% 1/4W
R327	4822 051 30008	Jumper 0603
R330	4822 051 30101	100Y 5% 0.062W
R331	4822 117 12925	47kY 1% 0.063W 0603
R332	4822 051 30101	100Y 5% 0.062W
R337	0300 206 10911	1Y 5% 1/4W
R345	4822 051 30222	2.2kY 5% 0.062W
R346	4822 051 30222	2.2kY 5% 0.062W
R351	4822 051 30103	10kY 5% 0.062W
R352	4822 051 30103	10kY 5% 0.062W
R353	4822 051 30682	6.8Y 5% 0.062W
R354	4822 051 30683	68kY 5% 0.062W
RA04	4822 051 30472	4.7Y 5% 0.062W
RA05	4822 051 30102	1kY 5% 0.062W
RA06	2322 702 81828	8.2Y 5% 0.1W 0603
RA07	2322 702 81828	8.2Y 5% 0.1W 0603
RA08	4822 051 30223	22kY 5% 0.062W
RA09	4822 051 30102	1kY 5% 0.062W
RA10	4822 051 30123	12kY 5% 0.1W
RA11	0300 106 83061	2kY 5% 1/10W 0603
RA12	4822 051 30102	1kY 5% 0.062W
RA13	4822 051 30123	12kY 5% 0.1W
RA14	0300 106 83061	2kY 5% 1/10W 0603
RA15	4822 051 30008	Jumper 0603
RA16	4822 051 30563	56kY 5% 0.062W
RA17	0301 406 39211	RESISTOR C.F 3.9K 1/6W 5%
RC25	4822 051 30479	47Y 5% 0.062W
RC26	4822 051 30223	22kY 5% 0.062W
RC30	4822 051 30101	100Y 5% 0.062W
RC42	4822 051 30332	3.3Y 5% 0.062W
RC46	4822 051 30332	3.3Y 5% 0.062W
RC47	4822 051 30101	100Y 5% 0.062W
RC52	0300 106 15161	150Y 5% 1/10W 0603
RC58	4822 051 30183	18kY 5% 0.062W
RC59	4822 051 30103	10kY 5% 0.062W
RC60	4822 051 30123	12kY 5% 0.1W
RC71	0300 106 15161	150Y 5% 1/10W 0603
RC72	0300 106 27261	RESISTOR C.F 2.7K 1/10W5% 0603
RC73	4822 051 30561	560Y 5% 0.062W
RC74	4822 051 30391	390Y 5% 0.062W
RC75	0300 106 82161	820Y 5% 1/10W 0603
RC76	4822 051 30102	1kY 5% 0.062W
RC77	0300 106 12261	1.2kY 5% 0603
RC79	4822 051 30561	560Y 5% 0.062W
RC90	4822 117 13632	100kY 1% 0603 0.62W
RC91	4822 117 12902	8.2kY 1% 0.063W 0603
RD01	4822 051 30273	27kY 5% 0.062W
RD02	0300 206 22131	220Y 5% 1/4W
RD03	0300 106 82061	RESISTOR C.F 82R 1/10W5% 0603
RD04	4822 117 13632	100kY 1% 0603 0.62W
RD05	0300 256 15001	15Y 1/4W fusable
RD06	0300 106 47361	RESISTOR C.F 4.7K 1/2W 5%
RD07	0300 506 39311	39Y 1/4W
RD09	0300 206 15431	150kY 5% 1/4W
RD10	0300 206 15431	150kY 5% 1/4W
RD11	0301 056 10911	1Y 5% 1W fusable
RD12	0301 006 22901	2.2Y 5% 1W fuseable
RD13	0300 557 22811	0.22Y 5% 1/2W fusable
RD14	0300 206 47331	RESISTOR C.F 47K 1/4W 5%
RD15	4822 051 30102	1kY 5% 0.062W
RD16	0300 206 47911	4.7Y 1/4W
RD17	0300 206 47231	4.7k 5% 1/4W
RD18	0300 106 56221	5.6kY 5% 1W fusable
RD19	0302 087 47811	RESISTOR M.O. 0.47R 2W %5
RD20	0300 506 10211	1kY 5% 1/2W
RD21	0300 106 15161	150Y 5% 1/10W 0603
RD50	0300 206 10131	100Y 5% 1/4W
RD51	0300 206 10131	100Y 5% 1/4W
RD52	4822 051 30332	3.3Y 5% 0.062W
RD53	0300 557 22811	0.22Y 5% 1/2W fusable
RD54	0301 086 10911	RESISTOR M.O 1R 1W 5%
RD55	0301 086 22010	RESISTOR M.O 22R 1W 5%
RD56	0301 006 39101	RESISTOR FUSIBLE 39R 1/4W 5%
RD57	0300 596 22211	220Y 1W
RD58	0300 206 22011	22Y 1/4W
RD59	4822 051 30333	33kY 5% 0.062W
RD61	4822 051 30008	Jumper 0603
RD62	0300 106 22461	RESISTOR C.F 220K 1/10W5% 0603
RD63	4822 051 30221	220Y 5% 0.062W
RD64	0300 206 75011	RESISTOR C.F 75R 1/4W 5%
RE01	4822 051 30101	100Y 5% 0.062W
RE02	4822 051 30101	100Y 5% 0.062W
RE03	4822 051 30109	10Y 5% 0.062W
RE04	4822 051 30759	75Y 5% 0.062W
RE05	4822 051 30102	1kY 5% 0.062W

RE06	4822 051 30101	100Y 5% 0.062W
RE07	4822 051 30759	75Y 5% 0.062W
RE08	4822 051 30759	75Y 5% 0.062W
RE09	4822 051 30759	75Y 5% 0.062W
RE10	4822 051 30101	100Y 5% 0.062W
RE11	5322 117 13042	3.9kY 1% 0.063W 0603
RE12	4822 051 30103	10kY 5% 0.062W
RE13	4822 051 30101	100Y 5% 0.062W
RE14	4822 051 30123	12kY 5% 0.1W
RE16	4822 051 30759	75Y 5% 0.062W
RE17	4822 051 30123	12kY 5% 0.1W
RE24	4822 051 30759	75Y 5% 0.062W
RE25	4822 051 30123	12kY 5% 0.1W
RE26	4822 051 30123	12kY 5% 0.1W
RE27	4822 051 30759	75Y 5% 0.062W
RE30	4822 051 30109	10Y 5% 0.062W
RE31	4822 051 30102	1kY 5% 0.062W
RE32	4822 051 30759	75Y 5% 0.062W
RE33	4822 051 30101	100Y 5% 0.062W
RE35	5322 117 13042	3.9kY 1% 0.063W 0603
RE36	4822 051 30103	10kY 5% 0.062W
RF01	0300 557 22811	0.22Y 5% 1/2W fusable
RF02	0300 557 22811	0.22Y 5% 1/2W fusable
RF03	0300 557 22811	0.22Y 5% 1/2W fusable
RF05	0300 557 22811	0.22Y 5% 1/2W fusable
RH01	0300 596 22211	220Y 1W
RH02	0300 596 22211	220Y 1W
RP01	0751 002 11220	CONN 2P VRT PFC(RED)7.5MM
RP02	4822 117 12925	47kY 1% 0.063W 0603
RP03	5322 117 13042	3.9kY 1% 0.063W 0603
RP04	0300 206 10331	10kY 5% 1/4W
RP05	0300 106 11231	1MY 2% 1/4W
RP06	0300 106 39231	3.9MY 2% 1/4W
RP07	0300 206 56030	RESISTOR C.F 56R 1/4W %5
RP08	4822 051 30333	33kY 5% 0.062W
RP09	0300 506 47611	4.7MY 5% 1/2W
RP10	0320 406 33521	33kY 5W
RP11	0300 256 15001	15Y 1/4W fusable
RP15	0302 086 15321	15k 5% 2W
RP16	4822 051 30008	Jumper 0603
RP17	4822 051 30103	10kY 5% 0.062W
RP18	4822 051 30103	10kY 5% 0.062W
RP21	4822 051 30472	4.7Y 5% 0.062W
RP22	4822 051 30102	1kY 5% 0.062W
RP24	0320 576 22951	RESISTOR W.W2.2R 5W10%VRTSFTY
RP25	0300 106 11461	RESISTOR C.F 1K 1/10W1% 0603
RP26	4822 051 30102	1kY 5% 0.062W
RP27	4822 117 13632	100kY 1% 0603 0.62W
RP28	0300 006 27261	2k7 1% 1/10W 0603
RP29	0301 081 50311	RESISTOR M.F 150K 1/4W 1%
RP30	4822 117 12925	47kY 1% 0.063W 0603
RP31	0320 576 22951	RESISTOR W.W2.2R 5W10%VRTSFTY
RT07	5322 117 13042	3.9kY 1% 0.063W 0603
RT08	4822 051 30153	15kY 5% 0.062W
RT09	4822 051 30123	12kY 5% 0.1W
RT14	0300 206 10131	100Y 5% 1/4W
RT15	0300 206 10131	100Y 5% 1/4W
RT17	4822 051 30008	Jumper 0603
RT18	4822 051 30223	22kY 5% 0.062W
RV01	4822 051 30332	3.3Y 5% 0.062W
RV02	4822 051 30391	390Y 5% 0.062W
RV03	0300 106 12161	RESISTOR C.F 120R 1/10W5% 0603
RV04	4822 051 30101	100Y 5% 0.062W
RV05	4822 051 30101	100Y 5% 0.062W
RV06	0300 106 18161	RESISTOR C.F 180R 1/10W5% 0603
RV08	0300 206 10131	100Y 5% 1/4W
RV09	0300 106 12261	1.2kY 5% 0603
RV10	0300 206 10031	10Y 1/4W
RV11	4822 051 30101	100Y 5% 0.062W
RV12	0300 106 18161	RESISTOR C.F 180R 1/10W5% 0603
RV13	4822 051 30103	10kY 5% 0.062W
RV14	4822 051 30101	100Y 5% 0.062W
RV15	4822 051 30101	100Y 5% 0.062W
RV16	4822 051 30101	100Y 5% 0.062W
RV17	4822 051 30103	10kY 5% 0.062W
RV21	4822 051 30681	680Y 5% 0.062W
RV22	4822 051 30393	39kY 5% 0.062W
RV23	4822 051 30563	56kY 5% 0.062W
RV24	4822 051 30101	100Y 5% 0.062W
RV25	4822 051 30273	27kY 5% 0.062W
RV26	0300 106 75461	750kY 5% 1/10W 0603
RV27	4822 051 30153	15kY 5% 0.062W
RV28	4822 051 30101	100Y 5% 0.062W
RV29	4822 051 30479	47Y 5% 0.062W
RV30	0300 206 47131	470Y 5% 1/4W
RV32	4822 051 30332	3.3Y 5% 0.062W
RV33	0300 106 12261	1.2kY 5% 0603
RV34	0300 106 12261	1.2kY 5% 0603
RV35	0300 106 12261	1.2kY 5% 0603
RV36	4822 117 13632	100kY 1% 0603 0.62W
RV37	4822 051 30102	1kY 5% 0.062W
RV38	0301 006 22901	2.2Y 5% 1W fuseable
RV41	4822 051 30759	75Y 5% 0.062W
RV42	4822 051 30472	4.7Y 5% 0.062W
RV47	0300 106 15161	150Y 5% 1/10W 0603
RV48	4822 051 30101	100Y 5% 0.062W
RV49	4822 051 30101	100Y 5% 0.062W
RV50	4822 051 30153	15kY 5% 0.062W
RV51	0300 106 12261	1.2kY 5% 0603
RV53	4822 051 30101	100Y 5% 0.062W
RV54	4822 051 30101	100Y 5% 0.062W
RV55	4822 051 30101	100Y 5% 0.062W
RV56	0300 206 10031	10Y 1/4W
RV57	0300 106 12261	1.2kY 5% 0603
RV58	0300 206 10131	100Y 5% 1/4W
RV59	0300 106 12261	1.2kY 5% 0603
RV60	4822 051 30103	10kY 5% 0.062W
RV62	0300 106 15161	150Y 5% 1/10W 0603
RV66	4822 051 30472	4.7Y 5% 0.062W
RV68	4822 051 30472	4.7Y 5% 0.062W
RV69	4822 051 30472	4.7Y 5% 0.062W
RV70	4822 051 30759	75Y 5% 0.062W
RV71	4822 051 30472	4.7Y 5% 0.062W
RV72	4822 051 30103	10kY 5% 0.062W
RV73	4822 117 12925	47kY 1% 0.063W 0603
RV74	4822 051 30101	100Y 5% 0.062W
RV75	0300 106 12261	1.2kY 5% 0603
RV78	4822 051 30101	100Y 5% 0.062W
RV79	0300 106 12261	1.2kY 5% 0603
RV80	4822 117 12903	1.8kY 1% 0.063W 0603
RV81	4822 051 30334	330kY 5% 0.062W
RV82	4822 051 30759	75Y 5% 0.062W
RV84	4822 117 12902	8.2kY 1% 0.063W 0603
VAP2	6113 800 12031	Potmeter 20k 0.1W 30%

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5LED	8411 190 10390	COMP. LED WITH HOLDER PHILIPS
L002	6083 800 02361	Coil choke 150oH
L301	6080 800 00751	22oH
L302	6080 800 00751	22oH
L306	6080 000 00071	COIL 3.3UH 5% 0.21A AXIAL FIX
LD02	6089 800 04011	COIL LINEARITY LC110&AT4042/92
LD03	6083 800 00381	COIL INJECT. 4.7MH 0.3A DC
LD04	6087 800 02411	Ferrite bead 3.5*9*0.8
LE01	6080 800 00191	8.2oH 5%
LE02	6080 800 00191	8.2oH 5%
LE03	6080 800 00331	COIL 33UH 0.16A 5% AX.FIXED
LE04	6080 800 00331	COIL 33UH 0.16A 5% AX.FIXED
LE05	6080 800 00191	8.2oH 5%
LE06	6080 800 00191	8.2oH 5%
LE07	6080 800 00191	8.2oH 5%
LE08	6080 800 00191	8.2oH 5%
LE09	6087 800 02411	Ferrite bead 3.5*9*0.8
LE10	0360 702 04111	FERRIT BEAD LI0805H151R-00 SMD
LE11	0360 702 04111	FERRIT BEAD LI0805H151R-00 SMD
LFP1	6089 800 02060	LINE FILTER 2*9MH 2.5A SFTY
LH01	6080 000 00021	10oH 5%
LH02	6080 000 00021	10oH 5%
LP02	6083 800 02361	Coil choke 150oH
LP03	6087 800 02411	Ferrite bead 3.5*9*0.8
LP04	6080 000 00301	Coil choke 900Y 50MHz
LP05	6087 800 02411	Ferrite bead 3.5*9*0.8
LT01	6080 800 00751	22oH
LT02	6089 800 00111	1oH 5%
LV01	6080 000 00021	10oH 5%
LV02	6080 000 00021	10oH 5%
LV03	6080 000 00021	10oH 5%
LV04	6080 000 00021	10oH 5%
LV05	6080 000 00021	10oH 5%
LV06	6080 000 00021	10oH 5%
LV07	6089 800 00121	4.7oH 5%
LV08	6080 800 00201	COIL 1MH 10% 100HZ
LV10	0360 702 04111	FERRIT BEAD LI0805H151R-00 SMD
T301	9965 000 20799	Filter 4.43 MHz
T302	0468 480 00001	BC848B
T303	0468 480 00001	BC848B
TA01	0468 480 00001	BC848B
TA02	0468 480 00001	BC848B
TC10	4822 130 40959	BC547B
TC11	4822 130 41691	BC556B
TC14	4822 130 41691	BC556B
TC70	4822 130 40959	BC547B
TC90	4822 130 41691	BC556B
TD01	4822 130 41053	BC639
TD02	4822 130 61265	BU508AF
TD02	4822 130 63127	BU2525AF
TD03	4822 130 40959	BC547B
TD04	4822 130 40855	BC337
TD50	4822 130 41691	BC556B
TE01	4822 130 40959	BC547B
TE04	4822 130 40959	BC547B
TP01	0460 000 01211	TRS.BUZ334 / SPP11N60C2
TP03	0469 862 94161	2SA720 / BC327
TP05	4822 130 40959	BC547B
TRQ*	0020 205 11160	Cable 30mm Bk
TV01	4822 130 41691	BC556B

TV04	4822 130 40959	BC547B
TV05	4822 130 40959	BC547B
TV06	0460 009 99101	TRS.BD680
TV10	4822 130 40959	BC547B
TV11	4822 130 40959	BC547B
TV12	4822 130 40959	BC547B
TV13	4822 130 40959	BC547B
TV14	0468 480 00001	BC848B

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D001	4822 130 30842	BAV21
D002	4822 130 30842	BAV21
D003	4822 130 30842	BAV21
D004	0483 214 23201	1N4007
D005	4822 130 30842	BAV21
D006	4822 130 30842	BAV21
D007	4822 130 30842	BAV21
D307	0483 221 07001	BA282&BA482
D308	0483 221 07001	BA282&BA482
DA01	4822 130 30621	1N4148
DA03	4822 130 83338	LL4148
DC03	4822 130 83351	BZX55-B2V4
DC10	0487 738 09001	KLR114L
DD01	4822 130 42606	BYD33J
DD02	4822 130 30621	1N4148
DD03	4822 130 42606	BYD33J
DD04	4822 130 42606	BYD33J
DD06	4822 130 42606	BYD33J
DD08	0480 000 00021	BYV95C
DD09	4822 130 30621	1N4148
DD10	0480 000 00021	BYV95C
DD11	4822 130 30621	1N4148
DD12	4822 130 42606	BYD33J
DD13	4822 130 31983	BAT85
DD14	4822 130 34382	BZX79-B8V2
DD15	4822 130 30621	1N4148
DD16	4822 130 42606	BYD33J
DD50	4822 130 30621	1N4148
DE01	4822 130 30621	1N4148
DE02	4822 130 30621	1N4148
DORT	9051 081 42410	COLOURED.BUTTON QUARTET 28'PT4
DP01	0483 214 23201	1N4007
DP02	0483 214 23201	1N4007
DP03	0483 214 23201	1N4007
DP04	0483 214 23201	1N4007
DP06	0480 000 00021	BYV95C
DP07	4822 130 30621	1N4148
DP08	0483 265 28011	DIODE RECT.BYT56K SOD-64
DP09	4822 130 30959	ZTK33B
DP10	4822 130 31983	BAT85
DP11	0480 000 00021	BYV95C
DP12	0483 270 28001	DIODE RECT.BYW76 SOD-64
DP13	0480 000 00021	BYV95C
DP19	4822 209 81397	TL431CLPST
DT01	4822 130 83338	LL4148
DV01	0483 270 30001	DIODE ZNR.36V BZD23C SOD-81
DV03	4822 130 31983	BAT85
DV04	4822 130 83338	LL4148

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7PFC	8411 600 28290	COMP..PFC ELIM 1.2A 28'PHILIPS
IC02	9322 147 25682	M24C16-WBN6
IC04	6093 300 01251	IR receiver TSOP2236
A--M	0020 205 11220	Cable 180mm Bk
ARKP	9051 102 80410	BACK COVER 28'PT 4365 GREY (10
GND*	0020 205 11230	CABLE DOUBLETERM.SYH.40CMCEN-K
I001	9352 713 37112	TDA6107JF/N3
I302	0450 000 01561	MSP3410G
IA01	4822 209 32269	TDA2616/N1
ID50	0450 000 02211	IC TDA8351 VERTICAL DEFLECTION
IP01	0451 900 00021	TDA16846
IP02	4822 209 15576	LE33CZ
IP03	0450 383 62811	TCDT1101
IP04	0452 381 03081	LM7805
IV01	0450 000 09871	IC TDA9365-PQ1 PSNTSC110DEG10P
J002	6087 800 02411	Ferrite bead 3.5*9*0.8
J009	6087 800 02411	Ferrite bead 3.5*9*0.8
J010	6087 800 02411	Ferrite bead 3.5*9*0.8
J065	6087 800 02411	Ferrite bead 3.5*9*0.8
J083	6087 800 02411	Ferrite bead 3.5*9*0.8
J092	6087 800 02411	Ferrite bead 3.5*9*0.8
J097	6087 800 02411	Ferrite bead 3.5*9*0.8
J109	6087 800 02411	Ferrite bead 3.5*9*0.8
J110	6087 800 02411	Ferrite bead 3.5*9*0.8
J132	4822 051 30008	Jumper 0603
J138	4822 051 30008	Jumper 0603
J146	4822 051 30008	Jumper 0603
J164	4822 051 30008	Jumper 0603
J180	4822 051 30008	Jumper 0603
J202	4822 051 30008	Jumper 0603
J203	4822 051 30008	Jumper 0603
J208	4822 051 30008	Jumper 0603
J219	6087 800 02411	Ferrite bead 3.5*9*0.8
JC01	4822 051 30008	Jumper 0603
JC03	4822 051 30008	Jumper 0603
JC05	4822 051 30008	Jumper 0603
JS03	4822 051 30008	Jumper 0603
JS04	4822 051 30008	Jumper 0603
JS05	4822 051 30008	Jumper 0603
JS06	4822 051 30008	Jumper 0603
JS07	4822 051 30008	Jumper 0603
KA04	0751 004 11000	Connector 4p v
KB**	0020 211 00450	CABLE DOUBLE TERMIN. DLK+KLT22
KC03	0751 007 11031	7P flat
KD01	0751 002 01010	4p h m
KD02	0750 302 11001	2p v 5mm
KD03	0020 920 00450	Cable 4p/450/3p Wh
KE01	0750 402 10081	SOCKET SCART DOUBLE PT92 PHLP.
KP02	0751 002 11781	2p 7.5mm
KP03	0750 302 61010	2p v 10mm
KPF1	0020 992 22740	CABLE 2PX2SKT DBL.ISLT PFC25CM
KPF1	0751 002 11220	CONN 2P VRT PFC(RED)7.5MM
KV01	8411 400 10016	COMP.CABLE HOLD. 6PX2SKT 42CM
NTC1	0300 208 51031	NTC 5Y
O--N	0020 205 11240	CABLE DOUBLETERM.SYH.25CM KLT
ONOF	9051 020 00250	BYL.BUTTON ONOFF 28PT4365 1081
WD01	6023 000 33071	Transf. hor. drive
WD02	6042 000 00551	TRF.FBT 110°PT92 SFTY
WP02	6021 900 00031	TRF.SMPS 110°PT92 90-270VACSFT

11. Revision list

First release